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Bio/dynamics Inc.

Division of Biology and Safety Evaluation

PROJECT NO. 79-2425

AN INHALATION FEMALE FERTILITY STUDY
WITH BENZENE IN RATS

Final Report

Submitted To: Chemical Manufacturers Association
Washington, D.C. 20009

Date: December 1, 1980

02217

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PROJECT NO. 79-2425

AN INHALATION FEMALE FERTILITY STUDY

WITH BENZENE IN RATS

ABSTRACT

This study was conducted for the Chemical Manufacturers Association and American Petroleum Institute to assess the effects of benzene on fertility of female rats. Benzene was administered by the inhalation route at dose levels of 1, 10, 30 and 300 ppm. Female Charles River CD rats (26/group) were treated 6 hours/day, five days/week during a ten-week pre-mating treatment period and ensuing mating period. Mated females were exposed daily (6 hours/day) during gestation to Day 20 and daily exposures resumed on Day 5 of lactation until weaning (Day 21 of lactation). Included in the study was a chamber-exposed control group. Pups were sacrificed on Day 21 and given a gross postmortem examination. Additionally, the weight of the testes, liver and kidneys were recorded for each male pup; the weight of the liver and kidneys was recorded for each female pup.

Parameters evaluated include: maternal mortality, body weight data, in-life physical observation data, pregnancy rates and parturition data (gestation length, number of live and dead pups at birth, sex distribution data). Pups were evaluated for survival, growth, organ weight data (absolute and relative to Day 21 body weight) and gross postmortem observations.

No treatment effect was evident in maternal mortality, body weight data, in-life observations or pregnancy rates.

At parturition, a slight increase in the mean number of dead pups was seen at the high-dose level; however, this difference was not statistically significant. A slight, although statistically significant, decrease in pup survival index for the Day 4-21 lactation interval was seen in the 10 ppm group. This was attributed to high pup mortality in two litters and since pup survival indices were not effected at the higher dose levels, no treatment-related effect was indicated.

Mean pup weights during lactation were comparable to control at the 1 and 10 ppm levels. At 30 ppm, mean pup weights (both sexes) were slightly lower than control at Day 21 and, in the 300 ppm level, mean pup weights were lower than control at Days 14 and 21 of lactation.

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Mean liver weights for the male pups (absolute and relative to body weights), were comparable to control at the 1 and 10 ppm levels and slightly lower than control at the 30 and 300 ppm levels; however, these latter differences were not statistically significant. Mean liver weights for the female pups were comparable to the control at the 1, 10 and 30 ppm levels and lower than control at the 300 ppm level. Mean liver/body weight ratios for the female pups were comparable between the control and treated groups. Mean kidney weights and kidney to body weight ratios for the treated female pups were considered comparable to controls, although kidney to body weight ratios were statistically higher for Groups III, IV and V (10, 30 and 300 ppm), respectively.

No treatment effect was evident in the gross postmortem examinations of the adult females or their offspring (Day 21).

Thus, benzene administered by inhalation at dose levels of 1, 10, 30 and 300 ppm to female rats during a pre-mating and mating period and the ensuing gestation and lactation periods was without adverse effects on reproduction. A trend toward reduced mean body weights and certain mean organ weights was observed in the Day 21 pups at the 30 and 300 ppm dose levels. Except for a single data point (reduced liver weight in the female pups at 300 ppm) these differences were not statistically significant. No treatment effects were seen in pup survival data during lactation and gross postmortem evaluations of these pups on Day 21.

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I. INTRODUCTION

This study, conducted for the Chemical Manufacturers Association and the American Petroleum Institute, was designed to evaluate the fertility and reproductive performance of female rats when administered benzene by inhalation at dose levels of 1, 10, 30 and 300 ppm. Test substance was administered 6 hours per day, 5 days a week for 10 consecutive weeks prior to mating. Treatment of females continued for 6 hours per day, 7 days a week during the ensuing gestation (Day 0-20) and lactation periods (Days 5-21).

Species and strain of test animal, dose levels and route of test substance administration were established by the sponsors. Testing was conducted at Bio/dynamics, Inc., Mettlers Road, East Millstone, New Jersey 08873. Raw data will be stored in the archives of Bio/dynamics, Inc.

II. MATERIALS AND METHODS

A. Test Substance:	Benzene
Supplier:	Chemical Manufacturers Association
Description:	Clear, colorless liquid with characteristic odor.
Lot No.:	API-CMA Benzene Lot No. 1 (Sample withdrawal date 11/13/79).
Stability:	Benzene was analyzed for purity at four intervals during the study; i.e. Pre-test, prior to initiation of Treatment, Week 6 of the Treatment Period and at Termination of treatment. (Appendix N).
Date Received:	13 November 1979
Storage:	Amber glass 1 gallon bottles at room temperature.
B. Test Animals:	
Species:	Rat
Strain:	CD® (Sprague-Dawley derived).
Justification of Animal Selection:	Generally recognized standard laboratory rat.

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B. Test Animals (cont'd):

Number of Animals

Received: 153 females
 Placed on Test: 130 females (26/group)
 Age:

Males: In-house breeding colony - males were proven fertile and less than one year in age at initiation of mating.

Females: Virgin; 7 weeks at initiation of pre-mating treatment period.

Supplier: Charles River Breeding Laboratories
 Wilmington, Massachusetts 01887

Date Received: 13 December 1979

C. Experimental Design:

Group	Dose ppm	Pre-Mating Treatment Period (days) ^a		No. of Rats		Females Sacrificed Post Weaning ^d
				Mated		
				Male ^b	Female	
I	Chamber-Exposed	N.T. ^c	70	13	26	A11
II	1	N.T.	70	13	26	A11
III	10	N.T.	70	13	26	A11
IV	30	N.T.	70	13	26	A11
V	300	N.T.	70	13	26	A11

^aTreatment Schedule: Six hours/day, five days/week for the 10 consecutive weeks pre-mating treatment period and ensuing mating period. Six hours daily seven days a week during gestation (Days 0-20) and daily seven days a week from lactation Days 5-21.

^bMales from the in-house breeding colony were used for mating.

N.T.=Not treated.

^dThe first females to wean litters were retained until sponsor decision was made to sacrifice. The last females to wean litters were sacrificed at weaning (Day 21 of Lactation).

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- D. Assignment to Group: Prior to initiation of the pre-mating treatment period, females were assigned to groups so as to equalize mean body weights at initiation of treatment¹. A sufficient number of females were received so as to discard unhealthy females prior to distributing into groups.
- E. Animal Identification: Each female rat was identified with a metal ear tag bearing its animal number. The individual animal number plus the Bio/dynamics project number comprised a unique identification number.
- F. Husbandry:
- Housing: Females:
Acclimation two/cage during the first week and individually for Week 2;
Pre-mating Treatment period - individually during exposure and non-exposure periods;
Mating - one male and two females;
Gestation and Lactation - females were housed individually during gestation and with litter during lactation.
- Caging:
Animals were housed in stainless steel wire mesh cages (exposure and non-exposure intervals).
- Food: Purina Laboratory Chow-5002 (Certified Diets); mash; females were without food during the exposure period. During the first week of acclimation, females were given Purina Laboratory Chow - 5001 pellets (certified diets used during study. See Appendix M).
- Water: ad libitum. By automated water system Elizabethtown Water Company (none during exposed period). Special water analyses were performed at two intervals during the study; during the pre-mating treatment period and near termination of the study (Appendix P).

¹Monroe 1860 calculator - in-house sorting program.

F. Husbandry (cont.):

Water (cont.):

Included in these water analyses were:

Heavy metals: Cd, As, Pb, Hg, Se, Ba
and Sb
PCB's
Organic Phosphate Pesticides - Mal-
athion
Chlorinated hydrocarbons including
lindane, heptachlor, DDT and dieldrin
Benzene
Carbamate pesticide screen

Environmental Conditions:

12 hour light/dark cycle

Temperature:

Monitored twice daily.

Humidity:

In the animal room: recorded twice
daily morning and afternoon (during
non-exposure period); acceptable range:
40-60%. Humidity was recorded for the
duration of the study (154 days). It
was found to be out of range approx-
imately 7% of the time. In the
chambers: recorded routinely during
the exposure intervals (at least three
distinct intervals daily). It was
found to be out of range approximately
18%-25% of the time.

G. Test Substance Administration:

Route:

Inhalation

Chamber Operation:

See Appendix A

Frequency:

6 hours/day, 5 days/week (Monday -
Friday) during 10 week pre-mating
treatment period and mating period;
daily from Days 0 to 20 gestation and
Days 5 to 20 of lactation.

Duration (Dates of
Treatment):

Pre-mating Treatment Period: 7 January
1980 - 14 March 1980

Mating Period: 16 March 1980 - 6 April
1980

Gestation Interval (First Day 0 - Last
Delivery): 17 March 1980 - 23 April
1980

Lactation Interval (First Day 0 - Last
weaning): 7 April - 14 May 1980

Atmospheric Sampling:

See Appendix A

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H. Estrous Cycle
Determination:

To determine if estrous cycling was being affected by treatment, daily vaginal smears were made and evaluated for each female beginning two weeks (14 days) prior to initiation of mating.

Mating:

Two females were caged with a male nightly. Females were then examined each morning for evidence of mating (vaginal plug and/or sperm in the vaginal smear). The day on which such evidence was observed was defined as Day 0 of gestation. Once mated, females were housed individually for the duration of gestation. The same male was caged with the same females nightly until both females were mated or for seven days (due to a scheduling error, males and females mated for eight days during the initial interval). If, following this interval, a female did not mate, she was placed with a different male for an additional seven day interval to be followed if necessary, with yet another seven day interval with a third male.

I. In-Life Observations and Measurements:

For Mortality and Gross
Signs of Toxicologic or
Pharmacologic Effects:

Females - Twice daily (morning and afternoon); pre- and post-exposure.

Detailed Physical
Examination:

Weekly throughout the study. During the treatment period these examinations were performed in the afternoon following the exposure interval.

Body Weights:

Females:

Once weekly through completion of the mating period. Mated females were weighed on Days 0, 7, 14 and 21 of gestation and Days 0, 4, 14 and 21 of lactation.

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I. In-Life Observations and Measurements (cont.):

Body Weights (cont.):

Litters:

Pups were counted on Day 0, 4 (pre-cull and post-cull), 14 and 21 of lactation. Litters were observed twice daily; (morning:afternoon) presence of dead pups were recorded. On Day 4 of lactation, litters with greater than 10 pups were culled to 10 with an equal number per sex when possible (random culling procedure was employed). Body weights were measured and sex determination made for each pup on Days 0, 4 (pre-cull and postcull), 14 and 21 of lactation. As found, dead pups were weighed and sexed internally.

J. Postmortem:

Sacrifice Method:

Overdose of ether.

Evaluation:

All females were given a gross post-mortem examination. Abnormal tissues noted during these evaluations were saved in 10% neutral buffered formalin. For females that were exposed to males the uteri were evaluated for the presence and number of implantation sites or scars.

Unmated Females:

Females that did not show evidence of mating were sacrificed at completion of the 21-day mating period (9 April 1980).

Mated Females That

Did Not Deliver a Litter:

Mated females that did not deliver a litter were retained and sacrificed after all litters were weaned. These females were subsequently sacrificed with those females that did wean litters. Uteri and ovaries for each of these females were saved in 10% neutral buffered formalin solution.

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J. Postmortem (cont.):

Females That Delivered
Litters:

The first females to wean litters were retained until sponsor decision was made to sacrifice. The last female to wean litters were sacrificed at weaning (Day 21 of lactation)

These females were sacrificed over a three day interval (May 12-14, 1980). The uterus and ovaries of each female were saved in a 10% neutral buffered formalin solution.

Pups:

Gross postmortem examinations, including internal sex determination, performed on all pups sacrificed on Day 21 (weaning) and pups found dead during lactation. The latter were also checked for the presence or absence of milk in the stomach. Pups found dead prior to Day 4 of lactation were preserved in 70% ethanol; those found dead after Day 4 of lactation were discarded. Only abnormal tissues were saved (10% neutral buffered formalin).

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J. Postmortem (cont.):

Sacrifice (cont.):

Sacrifice Method for pups: Lethal exposure to ether.

The following organs were weighed for each pup (control and each treated group) sacrificed at weaning (Day 21 lactation).

liver
kidneys (2)
testes (2)

Additionally, the following tissues were taken from two pups/sex/litter (control and each treated group) and preserved in 10% neutral buffered formalin¹ (eyes and testes placed initially in Bouin's solution prior to permanent storage in formalin):

adrenals (2)	pancreas
bone marrow (sternal)	salivary glands
brain (2 sections)	seminal vesicles
epididymides	skeletal muscle (biceps femoris with
eyes (2)	sciatic nerve attached - right side)
gonads	skin (with mammary gland)
heart	spinal cord (cervical)
intestine	spleen
colon	stomach
duodenum	thyroid (attached to trachea)
ileum	urinary bladder
kidneys (2)	uterus/prostate
liver (2 sections)	gross lesions
lung	tissue masses
lymph nodes (mesenteric)	thymus
mammary gland (right	pituitary
inguinal)	

No histopathological evaluations were performed (maternal and offspring).

K. Statistical Analysis:

(See Appendix Q).

¹Note that during the procedure of preserving tissues in formalin the tissues of some pups were inadvertently placed in containers filled with saline. These tissues were subsequently lost from the study. The pups whose tissues were lost from study are indicated in Appendix I (see footnote "b").

III. RESULTS AND DISCUSSION

A. Maternal Data

1. Mortality:

No mortality occurred in the control or treated Groups III (10 ppm) or V (300 ppm). In Group II (1 ppm) female No. 448 was killed in a moribund condition during the post-weaning interval. This female had weaned a litter and at time of sacrifice was extremely emaciated having malocclusion and ocular irregularities. In Group IV (30 ppm) one female (No. 829) died during Week 5 of the pre-mating treatment period. Death was accidental due to a handling problem.

No treatment effect on mortality was indicated.

2. Body Weight Data - Pre-mating Treatment Period:

Individual female body weight data during the pre-mating treatment period are presented in Appendix B, and are summarized in Table 1 (page 16).

Mean weekly body weight data during the pre-mating treatment period were comparable between the control and treated groups. Likewise, mean body weight gain during this same interval was comparable between these same groups.

3. Physical In-Life Observation Data:

The type and incidence of observations noted during the weekly physical evaluations were generally comparable between the control and treated groups throughout the study.

During one week of study (lactation period) several treated females were noted to have swelling in the cervical area. This observation was noted in three Group II (1 ppm) females, four Group III (10 ppm) females, seven Group IV (30 ppm) females and three Group V (300 ppm) females; this observation was not noted in the control group. Swelling in the cervical region is

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consistent with sialodacryoadenitis (SDA) infection in rats. Due to the transient nature of the observation in this study, no treatment effect was indicated.

4. Pregnancy Rate Data:

Pregnancy rates derived from data in Appendices D and J are presented in Table 2 (page 17).

Pregnancy rates were comparable between the control and treated groups.

One control and two low-dose females failed to show evidence of mating during the 21-day mating period. These females were sacrificed at completion of the mating period and uterine implantation sites were noted for each of the low-dose females (Nos: 437 and 446). The control female (No. 241) was not pregnant.

No treatment effect on pregnancy rate data was indicated.

5. Gestation and Lactation Body Weight Data:

Individual female body weight data during the gestation and lactation intervals are presented in Appendix C. Mean body weight data during these same intervals are summarized in Table 3 (page 18).

Mean body weights during the gestation and lactation intervals were comparable between the control and treated groups. Likewise, mean body weight changes during these same intervals were comparable between these same groups.

No treatment effect was indicated in gestation-lactation weight data.

B. Litter Examination Data:

1. Gestation Length (Appendix D):

Mean gestation lengths (Table 4, page 19) were comparable between the control and treated groups.

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No problems in delivery were noted in the treated females. In the control group, one female (No. 232) initiated delivery on Day 24 of gestation. At this time, the hindlimbs of one pup were noted in the vaginal canal. At subsequent evaluations no evidence of a delivered pup was noted. Terminal sacrifice of this female revealed one implantation scar.

2. Parturition Data:

The mean number of live and dead pups at birth (Day 0) are presented in Table 4 (page 19). These data are summarized from individual female litter data presented in Appendix D.

The mean number of live pups at birth was comparable between the control and treated groups. The mean number of dead pups at birth was comparable between the control and treated Groups II to IV (1, 10 and 30 ppm). In Group V (300 ppm) the mean number of dead pups at birth was slightly higher than control; however, this difference was not statistically significant. The increase in mean number of dead pups in the high-dose group was, in part, attributed to two litters. High-dose female No. 1025 delivered a litter of five viable pups and four dead pups. High-dose female No. 1031 had initiated delivery during the afternoon litter evaluations. At that time four dead pups were noted and removed, delivery was not considered complete but four viable pups were observed. When evaluated the next morning only two viable pups were noted.

The mean total litter size at birth (including live and dead pups) was comparable between the control and treated groups (Table 4).

Mean numbers of implantation scars and unaccounted-for-concepti (UFC) are presented in Table 4 (page 19); implantation scar data and UFC data for individual females are tabulated in Appendix E.

The mean numbers of implantation scars and UFC were comparable between the control and treated groups.

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3. Pup Survival Indices:

Pup survival indices for Days 0-4 and 4-21 of lactation are presented in Table 5 (page 20). These indices are derived from data in Appendix D.

Pup survival indices for the Day 0-4 interval were considered comparable between the control and treated groups. The Day 0-4 survival index for Group IV was significantly higher than control; however, this was not considered indicative of an adverse effect of treatment.

Pup survival indices for Days 4-21 were comparable between the control and treated Groups II, IV and V (1, 30, 300 ppm). In Group III (10 ppm) the pup survival index for Days 4-21 was significantly lower than control. This decrease in pup survival was attributed to increased pup mortality in two litters. In the absence of increased pup mortality at higher dose levels, this decrease in pup survival in Group III was considered spurious and not related to treatment.

4. Pup Sex Distribution Data:

Mean number of male and female pups at birth and sex ratios for Days 0, 4 (post-cull) and 21 are presented in Table 6 (page 21). These data are summarized from individual litter data (Appendix D).

The mean number of male and female pups at birth (Day 0) was considered comparable between the control and treated groups.

Sex ratios at birth (Day 0) indicated an increase in total number of male pups in Groups II (1 ppm) and V (300 ppm) and increase in total number of female pups in Group IV (30 ppm). These differences were attributed to normal biological variability within this parameter and not related to treatment.

Sex ratios at Day 21 were similar to sex ratios at Day 4 post-cull in the control and each treated group.

No treatment effect on sex ratio data was indicated.

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5. Pup Body Weight Data (Appendix O):

Mean pup body weight data distinguished by sex are presented in Table 7 (page 22).

Mean body weight data for both male and female pups were comparable between the control and Groups II and III (1 and 10 ppm) throughout lactation. In Group IV (30 ppm) mean pup weight data (both sexes) were comparable to control on Days 0, 4 and 14 of lactation and slightly lower than control on Day 21. This latter difference was not statistically significant.

In the high-dose group (300 ppm) mean pup body weights (both sexes) were comparable to control on Days 0 and 4 of lactation. On Days 14 and 21 mean pup weights for the high-dose group were slightly lower than control; however, these differences were not statistically significant.

6. Pup Organ Weight Data - Absolute and Relative to Day 21 Body Weights:

Individual pup organ weights, Day 21 body weights and organ/body weight ratios are presented in Appendix G. Mean pup organ weight data (absolute and relative to body weight) for both males and females are summarized in Table 8 (page 23).

Mean testes weights (absolute and relative to Day 21 body weights) were considered comparable between the control and treated groups. Mean liver weights (absolute and relative to body weight) for the male pups were comparable to control in Groups II and III (1 and 10 ppm, respectively) and slightly lower than control at the higher dose levels (30 and 300 ppm); however, these latter differences were not statistically significant. Mean kidney weights and mean kidney to body weight ratios for the treated male pups were considered comparable to the controls.

In the females, mean liver weights were considered comparable between the control and Groups II, III and IV (1, 10 and 30 ppm, respectively) and significantly lower than control at the high-dose level (300 ppm). However, when liver weights were analyzed relative to body weight data (mean liver/body weight ratios) these data were comparable between the control and treated groups. Mean kidney weights and kidney to body weight ratios for the treated female pups were considered comparable to controls, although kidney to body weight ratios were statistically higher for Groups III, IV, and V (10, 30 and 300 ppm, respectively).

C. Postmortem Observations:

1. Adult Females:

Gross postmortem observations for the females are presented in Appendix F. No treatment-related effects were indicated.

2. Pups:

Gross postmortem observations for the pups sacrificed on Day 21 are presented in Appendices H (pups for which tissues were not retained) and I (pups with selected tissues taken and saved in 10% formalin). Postmortem observations for dead pups recovered during the lactation interval and pups culled on Day 4 are presented in Appendices L and K, respectively.

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Evaluation of gross postmortem observations of pups sacrificed at weaning did not reveal a treatment-related effect. Likewise, evaluation of observations for dead pups recovered during the study or pups culled from litters at Day 4 did not reveal effects attributed to treatment.

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Table 1
An Inhalation Female Fertility Study
with Benzene in Rats

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Mean Female Body Weights and Weight Gains - (grams)
Pre-Mating Treatment Period

Group		Week:	0	1	2	3	4	5	6	7	8	9	10	Change in Weight 1-10
ppm														
I 0	Mean		159	179	191	202	217	225	234	239	245	250	255	76
	S.D.		10	12	15	15	16	18	17	20	22	22	22	14
	N		26	25 ^a	26	26	26	26	26	26	26	26	26	25 ^a
II 1	Mean		160	179	193	205	219	229	236	239	244	252	255	75
	S.D.		11	12	14	15	16	17	16	16	18	20	18	11
	N		26	26	26	26	26	26	26	26	26	26	26	26
III 10	Mean		160	179	192	204	218	228	235	238	243	252	254	75
	S.D.		9	12	12	13	13	17	17	16	17	20	19	10
	N		26	26	26	26	26	26	26	26	26	26	26	26
IV 30	Mean		160	177	193	205	217	227	234	241	246	253	257	79
	S.D.		10	12	13	13	14	16	17	17	19	22	21	14
	N		26	26	26	26	26	25 ^b	25	25	25	25	25	25
V 300	Mean		161	180	194	205	219	227	234	238	245	251	253	72
	S.D.		12	14	16	19	20	21	22	24	24	24	24	14
	N		26	26	26	26	26	26	26	26	26	26	26	26

No statistically significant differences from control group.
^aN equals 25 due to the incorrect recording of one animal's body weight (weight excluded from calculations).
^bN equals 25 due to death of an animal.
 Key: S.D. = Standard deviation
 N = Number of observations

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Table 2
An Inhalation Female Fertility Study
with Benzene in Rats

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Pregnancy Rate Data							
Group ppm	Exposed to Males	Number of Females Pregnant			Total	Pregnancy Rate ^b	
		Parturition	Implant Scars Only ^c	Implan- tation Sites Only ^a		No.	%
I 0	26	21	2	0	23	23/26	88.5
II 1	26	22	1	2	25	25/26	96.2
III 10	26	24	0	0	24	24/26	92.3
IV 30	25	19	2	0	21	21/25	84.0
V 300	26	23	0	0	23	23/26	88.5

No statistically significant differences from control group.

^aFemales with no evidence of mating were sacrificed at completion of the mating period. Several of these females did have uterine implantation sites.

^bTotal number of females pregnant/total number females exposed to males X 100. Pregnancy defined as parturition and/or implantation scars or implantation sites.

^cFemale did not deliver a litter but at terminal sacrifice implantation scars were noted along the uterine horn.

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Table 3
An Inhalation Female Fertility Study
with Benzene in Rats

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Mean Maternal Body Weights and Body Weight Gain - (grams)

Group ppm		Gestation				Change in Body Weight 0-21	Lactation				Change in Body Weight 0-21
		Days: 0	7	14	21		0	4	14	21	
I 0	Mean	253	273	300	375	122	284	289	311	322	39
	S.D.	20	22	23	32	23	25	23	24	23	13
	N ^a	22	22	22	22	22	21	21	21	21	21
II 1	Mean	255	273	301	376	121	282	291	319	320	38
	S.D.	21	24	26	32	20	24	22	23	22	15
	N ^a	22	22	22	22	22	22	22	22	22	22
III 10	Mean	261	282	311	388	126	288	298	325	325	37
	S.D.	19	20	23	30	21	24	26	23	24	19
	N ^a	24	24	24	24	24	24	24	24	24	24
IV 30	Mean	254	273	301	384	130	289	294	318	328	39
	S.D.	21	23	25	30	18	23	25	26	25	12
	N ^a	19	19	19	19	19	19	19	19	19	19
V 300	Mean	254	273	301	377	126	289	296	316	330	41
	S.D.	28	28	29	39	22	34	31	28	35	18
	N ^a	23	23	23	23	23	23	22	22	22	22

No statistically significant differences from control group.

^aN may be less than 26 due to exclusion of nonpregnant animals, death of an animal or because no evidence of mating was observed (Day 0 indeterminable).

Key: S.D. = Standard deviation

N = Number of observations

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Table 4
An Inhalation Female Fertility Study
with Benzene in Rats

Bio/dynamics Inc.

Parturition Data

Group ppm	No. of Litters	Mean Gestation Length (Days)	Mean No. Pups at Birth			Mean No. of Implant Scars	Mean No. UFC ^a
			Live	Dead	Total		
I 0	21	21.7	11.6	0.1	11.7	12.5	1.3
II 1	22	21.8	11.5	0.3	11.8	12.8	1.0
III 10	24	21.9	12.2	0.4	12.6	13.4	0.8
IV 30	19	21.7	11.7	0.1	11.8	12.9	1.1
V 300	23	21.6	11.3	0.7	12.0	13.5	1.5

No statistically significant differences from control group.

^aUFC = unaccounted-for-concepti - derived for each female by subtracting total number of pups at birth (live and dead) from number of implant scars.

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YZ0014351

Table 5
An Inhalation Female Fertility Study
with Benzene in Rats

Pup Survival Indices				
Group ppm	Survival Indices ^a			
	Days 0-4 ^b		Days 4 ^c -21	
	No.	%	No.	%
I 0	236/243	97.1	195/197	99.0
II 1	251/254	98.8	206/206	100.0
III 10	290/293	99.0	216/229	94.3 [#]
IV 30	217/218	99.5 [#]	177/178	99.4
V 300	253/261	96.9	198/202	98.0

Significantly different from control group: $p < 0.05$ (Fisher-Exact Test); for explanation of statistical procedure, see Appendix Q.

^aSurvival indices are derived by dividing the total number of pups alive at the end of a time interval by the total number alive at the beginning of the interval.

^bPre-cull.

^cPost-cull.

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Table 6
An Inhalation Female Fertility Study
with Benzene in Rats

Pup Sex Distribution Data^a

Group ppm	Day 0				Day 4 (Post-Cull)		Day 21 (Weaning)	
	Mean No. Pups		Sex Ratio (M/F)		Sex Ratio (M/F)		Sex Ratio (M/F)	
	Male	Female						
			No.	%	No.	%	No.	%
I 0	5.9	5.7	123/120	102.5	102/95	107.4	101/94	107.4
II 1	6.2	5.3	137/117	117.1	111/95	116.8	111/95	116.8
III 10	6.2	6.0	148/145	102.1	112/117	95.7	108/108	100.0
IV 30	5.3	6.4	101/122	82.8	80/98	81.6	79/98	80.6
V 300	6.3	5.1	144/117	123.1	103/99	104.0	101/97	104.1

^aRatios not analyzed statistically.

Key: M/F = Total No. Male Pups/Total No. of Female Pups.

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Table 7
An Inhalation Female Fertility Study
with Benzene in Rats

Mean Pup Weights (grams) - Distinguished by Sex										
Group ppm	Day 0		Day 4				Day 14		Day 21	
			Pre-Cull		Post-Cull					
	M	F	M	F	M	F	M	F	M	F
I 0	6.3	6.1	9.6	9.3	9.6	9.3	23.0	22.1	37.3	36.6
II 1	6.4	5.9	10.1	9.2	10.1	9.2	23.3	22.1	37.4	35.6
III 10	6.5	6.2	10.3	9.8	10.3	9.9	23.5	23.0	38.1	37.1
IV 30	6.4	6.1	10.0	9.6	10.0	9.6	22.3	22.1	34.7	34.2
V 300	6.1	5.9	9.7	9.3	9.7	9.4	21.8	21.1	34.3	33.2

No statistically significant differences from control group.
Key: M = Male
F = Female

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YZ0014354

Table 8
An Inhalation Female Fertility Study
with Benzene in Rats

Mean Pup Organ Weights, Day 21 Body Weights and Organ/Day 21 Body
Weight Ratios - Males

Group ppm		Day 21 Body Wt. ^a (g)	Organ Weight (g)			Organ/Day 21 Weight Ratios x 10 ⁻²		
			Testes (g)	Liver (g)	Kidneys (g)	Testes (g)	Liver (g)	Kidneys (g)
I 0	Mean:	37.6	0.162	1.705	0.443	0.426	4.493	1.177
	S.D.:	5.7	0.037	0.390	0.080	0.068	0.513	0.108
	N	101	101	101	101	101	101	101
II 1	Mean:	38.2	0.178	1.711	0.467	0.470	4.438	1.226
	S.D.:	7.2	0.051	0.435	0.101	0.145	0.479	0.145
	N	111	111	110	111	111	110	111
III 10	Mean:	38.0	0.169	1.693	0.469	0.443	4.435	1.241
	S.D.:	7.7	0.043	0.465	0.099	0.059	0.665	0.125
	N	108	108	108	108	108	108	108
IV 30	Mean:	34.0	0.151	1.510	0.424	0.442	4.380	1.239
	S.D.:	6.2	0.042	0.408	0.088	0.078	0.536	0.093
	N	79	79	79	78	79	79	78
V 300	Mean:	34.1	0.151	1.453	0.419	0.446	4.216	1.229
	S.D.:	5.7	0.031	0.347	0.086	0.060	0.470	0.142
	N	101	101	101	101	101	101	101

No statistically significant difference from the control group.

Key: S.D. = Standard deviation

N = Number of observations

^aData not evaluated statistically - mean pup body weight data during lactation are presented in Table 7 and summarized in Appendix O. Differences in mean pup body weight data between Tables 7 and 8 are due to analysis of individual pup data (Table 8) versus mean litter data (Table 7).

Table 8 (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Mean Pup Organ Weights, Day 21 Body Weights and Organ/Day 21 Body
Weight Ratios - Females

Group ppm		Day 21 Body Wt. ^a (g)	Organ Weight (grams)		Organ/Day 21 Body Weight Ratio x 10 ⁻²	
			Liver (g)	Kidneys (g)	Liver (g)	Kidney s (g)
I 0	Mean:	36.3	1.690	0.444	4.626	1.223
	S.D.:	5.2	0.355	0.075	0.546	0.103
	N	94	94	94	94	94
II 1	Mean:	35.5	1.587	0.444	4.438	1.256
	S.D.:	5.9	0.408	0.075	0.674	0.095
	N	95	95	94	95	94
III 10	Mean:	37.7	1.783	0.488	4.700	1.295††
	S.D.:	7.1	0.431	0.102	0.492	0.103
	N	108	108	108	108	108
IV 30	Mean:	33.8	1.560	0.450	4.601	1.330††
	S.D.:	5.3	0.326	0.084	0.507	0.115
	N	98	98	98	98	98
V 300	Mean:	32.6	1.462†	0.436	4.442	1.333††
	S.D.:	5.1	0.339	0.079	0.469	0.136
	N	97	97	96	97	96

Significantly different from control group: †p<0.05, †† p<0.01 see Appendix Q for explanation of statistical procedure.

Key: S.D. = Standard deviation

N = Number of observations

^aData not evaluated statistically - mean pup body weight data during lactation are presented in Table 7 and summarized in Appendix O. Differences in mean pup body weight data between Tables 7 and 8 are due to analysis of individual pup data (Table 8) versus mean litter data (Table 7).

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YZ0014356

A Female Fertility Study in Rats with Benzene
Inhalation ReportSUMMARY

Four groups of 26 female Sprague-Dawley (CD®) rats were exposed to benzene vapors for six hours per day, five days per week for ten consecutive weeks and were then bigamously paired with untreated males. During the mating phase the females only were exposed as before.

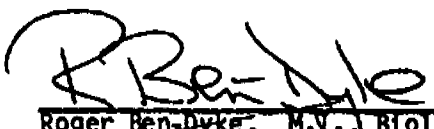
Animals that successfully mated were exposed throughout the gestation and lactation periods for 6 hours per day, seven days per week. Following the 21-day lactation period the exposure regime reverted to 5 days per week for two weeks to assess the need for further matings.

A similarly constituted group was exposed to air alone according to the same regime, and served as a control.

Air samples from each chamber were analyzed by either infra-red spectroscopy or gas liquid chromatography six times during each exposure. The variable background interference of the infra-red technique, due to the presence of animals in the exposure chamber, was significant at the two lower levels and in part accounts for the greater fluctuations in chamber concentration at these levels.

Mean levels and ranges (as determined analytically) on samples of chamber atmospheres (expressed in PPM) were as follows:

Reproductive Phase	Group			
	II	III	IV	V
Premating	1.0 (0.3-3.5)	9.8 (7.4-12.7)	30.3 (26.3-35.4)	299 (273-334)
Mating	0.7 (0.0-1.4)	9.8 (8.0-12.1)	30.9 (29.6-33.0)	300 (287-319)
Gestation	0.8 (0.0-1.4)	10.9 (8.0-14.1)	30.9 (29.6-33.0)	296 (260-319)
Lactation	1.2 (0.2-1.4)	12.7 (9.5-15.2)	30.7 (29.0-32.4)	298 (260-337)


Roger Ben-Dyke, M.V., Biol.
Director, Inhalation Toxicology
for George M. Rusch, Ph.D.

12/2/80
Date

Report Preparation: Cecelia A. Bozak, B.A.
Study Monitor, Inhalation

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YZ0014357

Appendix A (Cont.)
A Female Fertility Study in Rats with Benzene

INTRODUCTION

This study was designed to evaluate the fertility and reproductive performance of female rats treated with benzene for ten consecutive weeks prior to mating. Treatment of the females continued during the ensuing gestation and lactation periods.

In this report, nominal and actual concentrations are presented from Day 1 (January 7, 1980) through termination (May 14, 1980) of the study.

EXPERIMENTAL DESIGN

Group	Exposure Treatment	Pre-Mating Treatment Schedule (days) ^a		Number of Rats		
				Mated		Females Sacrificed at Weaning
		M	F	M	F	
I	Control-chamber exposed	N.T.	70	13	26	A11
II	Benzene - 1 ppm	N.T.	70	13	26	A11
III	Benzene - 10 ppm	N.T.	70	13	26	A11
IV	Benzene - 30 ppm	N.T.	70	13	26	A11
V	Benzene - 300 ppm	N.T.	70	13	26	A11

^aTreatment schedule: Six hours/day, five days/week for the 10 consecutive week pre-mating treatment period and ensuing mating period. Six hours daily seven days per week during gestation (Day 0-20) and Days 5-21 of lactation.

^bMales from the in-house breeding colony were used for mating.

N.T. = Not treated.

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Appendix A (Cont.)
A Female Fertility Study in Rats with Benzene

Test Material Administration

Benzene vapor concentrations were generated into one cubic meter stainless steel and glass chambers using a flash-evaporation generating system. Liquid benzene was pumped into a heated 3-neck flask through a 3-inch length of 1/8-inch diameter teflon tubing from a glass syringe fitted with a 16 gauge stainless steel needle. Flask temperature was maintained at 50°C in Groups II, III, and IV and 80°C in Group V. These temperatures were selected as the minimum required to achieve complete volatilization of the test material. The 3-neck flask was heated using a Glas-Col heating mantle and temperature was measured using a Glas-Col laboratory pyrometer. The benzene was pumped using Sage Instruments Model 220 and 341 syringe pumps. Adjustments in chamber concentration were made by adjusting pump flow rates (ml/hr) or chamber air flow (lpm). Air flow was determined by measuring the change in pressure (ΔP , cm H₂O) over a one inch orifice plate using a Dwyer magnehelic pressure gauge. Airflows were maintained between 150 and 250 lpm for the duration of the six hour exposures.

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Chamber Operation

The stainless steel and glass exposure chambers in which the animals were exposed had a total volume of one cubic meter with an effective volume of 760 liters. They were operated dynamically at an air flow between 155 and 245 liters per minute, providing one air change in from 6.5 to 4.1 minutes and a 99% equilibration time (t₉₉) from 29.9 to 18.9 minutes.

Daily Nominal Concentration

Nominal exposure concentrations were calculated daily using the following equation:

$$\text{Nominal Conc. (ppm)} = \frac{\Delta \text{wt (g)} \times 1000 \text{ mg/g}}{\Delta t \text{ (min)} \times \text{chamber air flow (lpm)}} \times 307.78 \text{ ul/l}$$

where 307.78 mg/ul is the factor of conversion of mg/l to ul/l (ppm) for benzene based on gas constant laws.

Daily nominal concentrations are presented for Groups II-V in Table 23.

Chamber Atmospheric Concentration

One sample per hour (at about 0.5, 1.5, 2.5, 3.5, 4.5 and 5.5 hours) was drawn from each exposure chamber using either a Wilks Instrument Company, Miran Long Pathlength Infrared Analyzer Model 1A (in-house identification numbers "L" and "4") or an on-line Tracor Gas Chromatograph Model 550.¹ The exposure levels were determined by comparing the observed absorbance of these samples to a previously determined standard curve generated using the test material under the same instrumental settings. The calibration curves for this test material are presented on pages 10-18 of this appendix.

¹Miran L was used from Day 1 (1/7/80) through Day 66 (3/12/80) of the study. Miran 4 replaced Miran L on Day 67 (3/13/80) and was used through termination of the study (Day 130 - 5/14/80). Therefore, calibration curves were generated for each phase of the study, the first set corresponding to Miran L (1/7/80 - 3/12/80) and the second set corresponding to Miran 4 (3/13/80 - 5/14/80). Measurements were taken using the on-line Tracor gas chromatograph in Groups II and III from Day 94 (4/9/80) through termination of the study. These values were used for measuring chamber concentration through termination of the study. Infrared measurements were taken during this period for comparative purposes only.

Appendix A (Cont.)
A Female Fertility Study in Rats with Benzene

Calculation of Chamber Concentrations

Upon initiation of the study, it was observed that the presence of the animals in the chamber created a background interference in the infrared monitoring procedure used to analyze the benzene exposure concentration. This interference was negligible for the Group IV (30 ppm) and Group V (300 ppm) exposure groups but if uncorrected, could have resulted in a significant overstatement of the concentration in the Group II (1.0 ppm) and Group III (10 ppm) exposure groups. Using the first few weeks of data a correction factor was calculated, based on measurements of the background infrared absorption in the control chamber.

An attempt was made to adjust the measurements using the control chamber data on a point-for-point basis. However, since the animals were exposed in a separate room, this approach did not produce a good correlation; therefore, a correction procedure was developed using the average measured absorbance in the control chamber. This procedure involved the calculation of the average measured interference in the control chamber and then correcting each individual measurement in the Group II and Group III chambers by subtracting this average background reading from the observed exposure chamber absorbance measurement.

During the first week of the study, when only the reproduction animals were exposed, the correction factor was estimated at 0.003 absorbance units. During the period of the study when the animals from the reproduction study were receiving simultaneous exposure with the animals from the dominant-lethal study (79-7342) the correction factor was estimated at 0.007 absorbance units based on the first three weeks of data. It was also

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Appendix A (Cont.)
A Female Fertility Study in Rats with Benzene

Calculation of Chamber Concentrations (cont.)

observed during this period that the first one or two samples of the day had higher absorbances than the remaining samples in both the control and low level exposure groups. This was attributed to the increased activity of the animals following loading of the chamber. During the last part of the study, exposure concentrations were monitored using the on-line gas chromatography procedure described above. Measurements were still taken by infrared to allow for comparison.

At the conclusion of the study, samples collected at each sampling interval (ie. 1/2 hr, 1-1/2 hr, 2-1/2 hr, 3-1/2 hr, 4-1/2 hr and 5-1/2 hr) were separately averaged and then statistically compared to one another.² Where possible, separate calculations were performed for each phase of the study and following replacement of the original infrared monitor. When it was found that a particular interval possessed a unique correction factor, either by being statistically different, or in the case of the smaller sample groups, by appearing to be unique, this factor was applied to all absorbance measurements taken at that sample interval, for that period. These values have been used to calculate the corrected individual exposure concentrations. The statistical comparison is presented in Table 1 and the actual correction factors are presented in Table 2.

²F-test and Student's t-test (modified using Cochran's approximation [t] when variances differ). Snedecor G.S., and W.G. Cochran, Statistical Methods, 6th ed., Iowa State University Press, Ames, 1967, pp 104-106, 114-119.

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Appendix A (cont.)
A Female Fertility Study in Rats with Benzene

Nominal vs. Analytical Concentrations
(Table 25)

A comparison of mean daily nominal concentrations and mean daily analytical concentrations was performed for Groups II through V for the entire study. In addition, in Groups II and III mean daily nominal and analytical concentrations were compared separately for the periods when infrared measurements of concentration were taken (1/7/80 - 4/8/80) and when gas chromatographic measurements of concentrations were taken (4/9/80 - 5/12/80).

Differences between mean nominal and analytical measurements ranged from 6 to 16% during the entire study. For Group II the difference in mean nominal and analytical concentrations was 24% when infrared analysis was used and 8% when gas chromatographic analysis was used. For Group III the difference in mean nominal and analytical concentrations was 1% when infrared analysis was used and 9% when gas chromatographic analysis was used.

The close agreement between mean nominal and analytical concentrations for all phases of this study is considered to be confirmation of the mean analytical values.

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Appendix A (Cont.)

Table I

A Female Fertility Study in Rats with Benzene

Statistical Calculation of Correction Factors Used for
Determination of Exposure Concentrations for Groups II and III

Time Interval	Exposure Nos.		Mean Background Absorbances (Group I)					
			Sample Intervals:					
			1/2 hr	1-1/2 hr	2-1/2 hr	3-1/2 hr	4-1/2 hr	5-1/2 hr
1/7/80 - 1/11/80	1-5 ^a		0.003	0.003	0.003	0.003	0.003	0.003
1/14/80 - 3/12/80	6-48	Mean	0.0128 ⁺	0.0081 ⁺	0.0068	0.0066	0.0061	0.0061
		S.D.	0.0030	0.0027	0.0022	0.0021	0.0015	0.0021
		N	43	43	43	43	42	43
3/13/80 - 3/21/80	49-55	Mean	0.0115 ^{††}	0.0090	0.0088	0.0087	0.0084	0.0085
		S.D.	0.0042	0.0048	0.0044	0.0034	0.0035	0.0034
		N	7	7	7	7	7	7
3/22/80 - 5/14/80	56-109	Mean	0.0071 ⁺	0.0060	0.0056	0.0053	0.0052	0.0049
		S.D.	0.0027	0.0023	0.0023	0.0026	0.0026	0.0025
		N	45	46	46	46	46	46

⁺Significantly different from succeeding values ($p < 0.05$).

^{††}Different from succeeding values ($p > 0.05$).

^aThe limited amount of data available did not allow for specific interval correction.

79-2425

Appendix A (Cont.)
Table 2
A Female Fertility Study in Rats with Benzene
Correction Factors Applied to Measured Absorbance
for Groups II and III

Time Interval	Exposure Nos.	Correction Factors Sample Intervals:					
		<u>1/2 hr</u>	<u>1-1/2 hr</u>	<u>2-1/2 hr</u>	<u>3-1/2 hr</u>	<u>4-1/2 hr</u>	<u>5-1/2 hr</u>
1/7/80 - 1/11/80	1-5	0.003	0.003	0.003	0.003	0.003	0.003
1/14/80 - 3/12/80	6-48	0.013	0.008	0.006	0.006	0.006	0.006
3/13/80 - 3/21/80	49-55	0.012	0.009	0.009	0.009	0.009	0.009
3/22/80 - 5/14/80	56-109	0.007	0.005	0.005	0.005	0.005	0.005

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Appendix A (Cont.)
A Female Fertility Study in Rats with Benzene

Infrared Analysis of Benzene

CALIBRATION FOR: Benzene
Molecular Weight: 78.11 amu
Density: 0.878 g/ml

MIRAN SETTINGS:

Wavelength: 3.3 u - optimized to 3.28 u
Pathlength: 21.75 m (14.0 dial reading)
Range: 0.1 Å (Groups I, II, III) 1.0 Å (Groups IV, V)
Slit Width: 1 mm
Meter Response Time: 1 second
Coarse Zero: x 1

STANDARD: Measured volumes of benzene were injected into a closed loop circulation system in order to generate atmospheres inside the Miran of known concentration levels. The closed loop system, including the Miran, measures 5.64 liters in volume.

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Appendix A (Cont.)
A Female Fertility Study in Rats with Benzene

Miran Ambient Air Analyzer
Closed Loop Calibrations
Miran L (1/14/80 - 3/12/80)

Range	Injection Volume (μ l)	Concentration (ppm)	Absorbance			
			A ₁	A ₂	A ₃	A ₄
0.1 λ	0.01	0.5	0.001	0.001	0.001	0.001
	0.02	1.0	0.003	0.002	0.003	0.002
	0.03	1.4	0.004	0.003	0.005	0.003
	0.05	2.4	0.007	0.006	0.007	0.006
	0.10	4.8	0.015	0.014	0.012	0.014
	0.15	7.2	0.023	0.022	0.019	0.021
	0.19	9.1	0.029	0.029	0.024	0.027
	0.21	10.1	0.032	0.032	0.026	0.030
	0.23	11.0	0.034	0.035	0.028	0.033
	0.30	14.4	0.045	0.046	0.038	0.043
	0.50	24.0	0.075	0.077	0.065	0.074
	0.60	28.8	0.091	0.092	0.079	0.088
1.0 λ	0.50	24.0	0.075	0.070	0.070	0.075
	0.60	28.8	0.09	0.090	0.080	0.090
	0.63	30.2	0.10	0.095	0.090	0.095
	0.65	31.1	0.10	0.10	0.090	0.095
	0.70	33.5	0.11	0.11	0.10	0.10
	1.00	47.9	0.15	0.15	0.14	0.15
	2.00	95.8	0.30	0.30	0.28	0.29
	3.00	143.7	0.44	0.43	0.41	0.43
	4.00	191.6	0.56	0.56	0.53	0.55
	5.00	239.6	0.68	0.68	0.64	0.66
	6.00	287.5	0.79	0.79	0.74	0.76
	6.20	297.0	0.81	0.81	0.76	0.78
	6.30	301.8	0.82	0.82	0.77	0.79
	6.50	311.4	0.84	0.84	0.79	0.81
	7.00	335.4	0.89	0.89	0.83	0.85
	7.50	359.3	0.94	0.94	0.87	0.89
	8.00	383.3	0.99	0.99	0.91	0.94

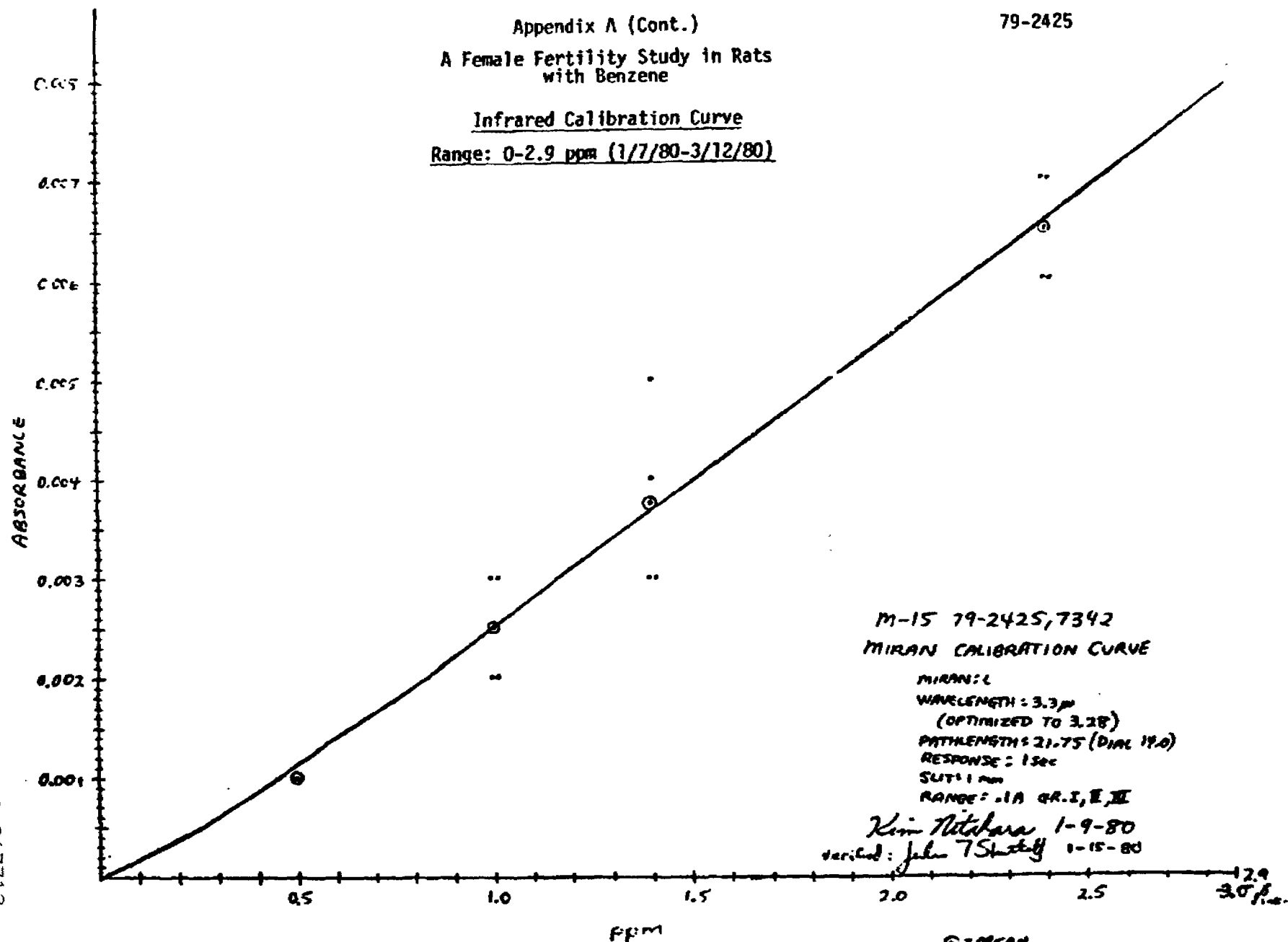
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Appendix A (Cont.)
A Female Fertility Study in Rats
with Benzene

79-2425

Infrared Calibration Curve
Range: 0-2.9 ppm (1/7/80-3/12/80)



M-15 79-2425, 7342
MIRAN CALIBRATION CURVE

MIRAN: L
WAVELENGTH: 3.3 μ
(OPTIMIZED TO 3.28)
PATHLENGTH: 21.75 (DIAL 19.0)
RESPONSE: 1 sec
SLIT: 1 mm
RANGE: .1A QR. I, II, III

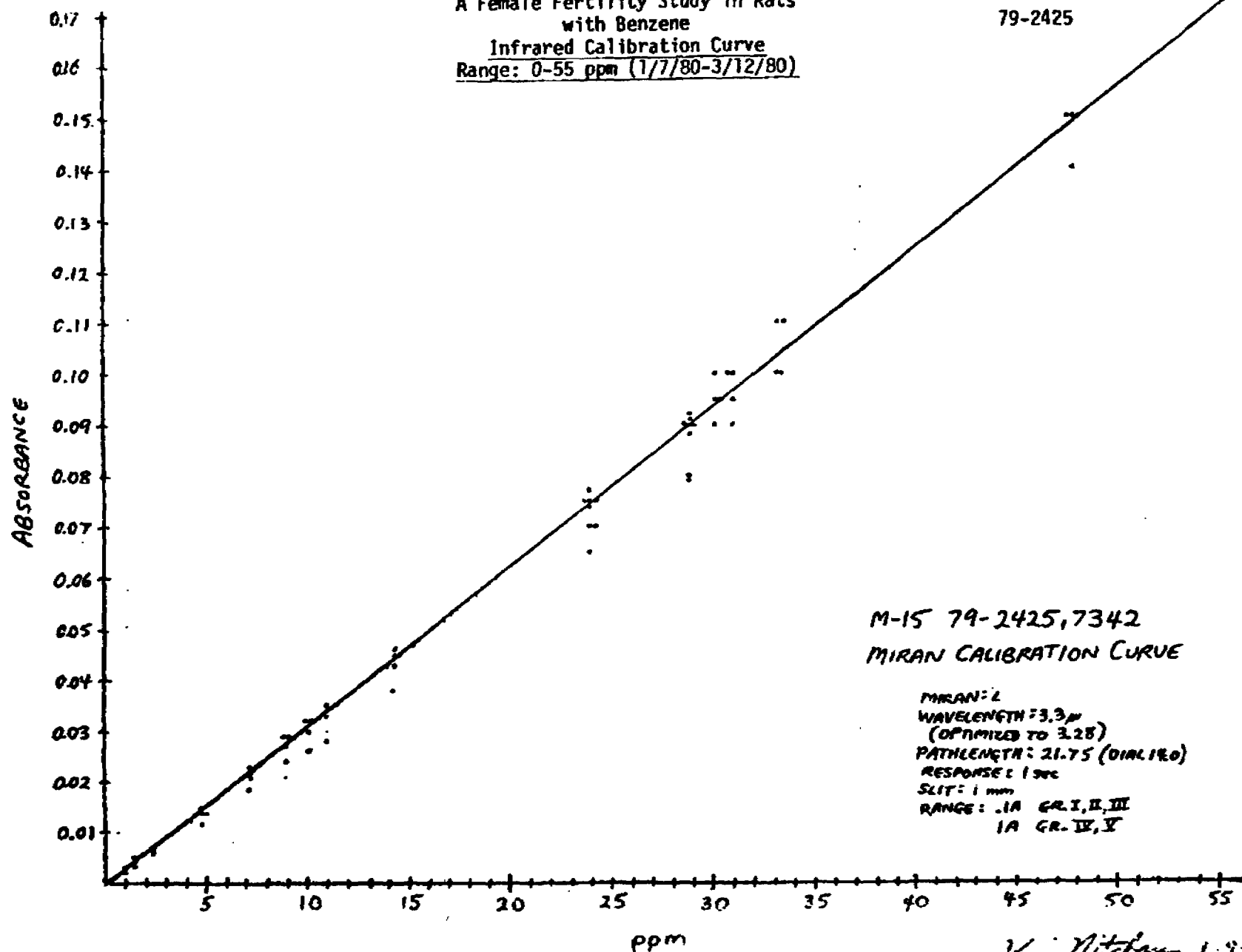
Kim Nishikawa 1-9-80
verified: *John T. Shetty* 1-15-80

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Appendix A (Cont.)
A Female Fertility Study in Rats
with Benzene
Infrared Calibration Curve
Range: 0-55 ppm (1/7/80-3/12/80)

79-2425

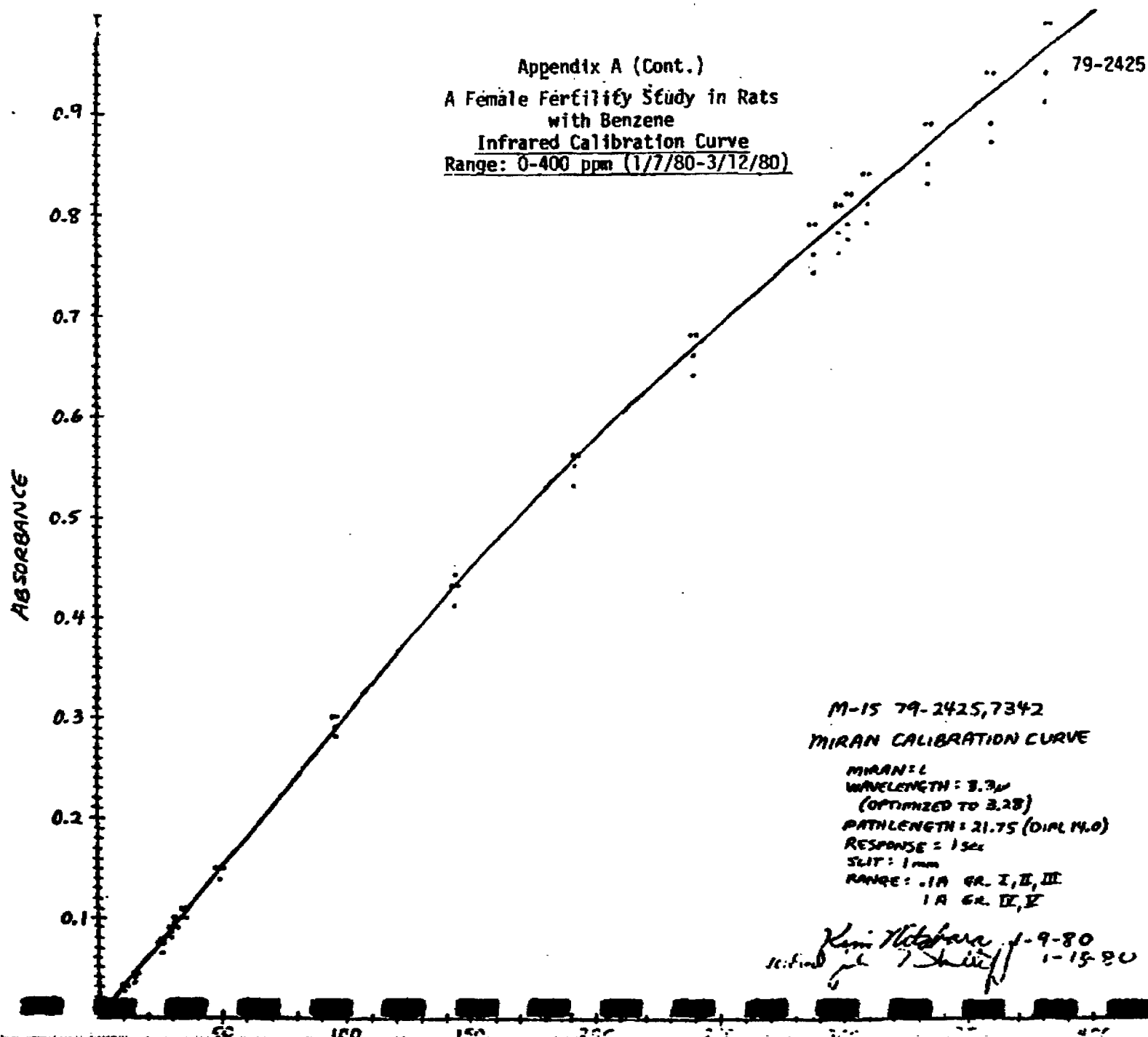


V. Nitbay 1-9-80

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YZ0014369

Appendix A (Cont.)
 A Female Fertility Study in Rats
 with Benzene
Infrared Calibration Curve
Range: 0-400 ppm (1/7/80-3/12/80)



M-15 79-2425, 7342
 MIRAN CALIBRATION CURVE

MIRAN-1
 WAVELENGTH: 3.3μ
 (OPTIMIZED TO 3.28)
 PATHLENGTH: 21.75 (DIAL 14.0)
 RESPONSE: 1 sec
 SLIT: 1 mm
 RANGE: .1A GR. I, II, III
 1A GR. IV, V

Kim Nishihara 1-9-80
10:10 AM 7-15-80

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Appendix A (Cont.)
A Female Fertility Study in Rats with Benzene

Miran Ambient Air Analyzer
Closed Loop Calibrations
Miran 04 (3/13/80 - 5/14/80)

Range	Injection Volume (μ l)	Concentration (ppm)	Absorbance			
			A1	A2	A3	A4
0.1 Å	0.01	0.5	0.001	0.001	0.002	0.000
	0.02	1.0	0.002	0.002	0.003	0.001
	0.03	1.4	0.002	0.004	0.005	0.002
	0.05	2.4	0.005	0.007	0.008	0.003
	0.10	4.8	0.012	0.014	0.016	0.009
	0.15	7.2	0.018	0.022	0.023	0.015
	0.19	9.1	0.024	0.027	0.029	0.020
	0.21	10.1	0.026	0.030	0.032	0.022
	0.23	11.0	0.029	0.034	0.036	0.025
	0.30	14.4	0.039	0.044	0.046	0.033
	0.50	24.0	0.068	0.072	0.074	0.062
	0.60	28.8	0.081	0.086	0.088	0.074
1.0 Å	0.50	24.0	0.07	0.07	0.07	0.07
	0.60	28.8	0.09	0.08	0.08	0.08
	0.63	30.2	0.09	0.09	0.09	0.09
	0.65	31.1	0.10	0.09	0.09	0.09
	0.70	33.5	0.10	0.10	0.10	0.10
	1.00	47.9	0.14	0.14	0.14	0.14
	2.00	95.8	0.27	0.26	0.26	0.25
	3.00	143.7	0.38	0.38	0.37	0.37
	4.00	191.6	0.48	0.48	0.46	0.46
	5.00	239.6	0.57	0.58	0.55	0.55
	6.00	287.5	0.65	0.66	0.62	0.62
	6.20	297.0	0.66	0.68	0.63	0.63
	6.30	301.8	0.67	0.68	0.64	0.64
	6.50	311.4	0.68	0.70	0.65	0.65
	7.00	335.4	0.71	0.73	0.68	0.69
	7.50	359.3	0.75	0.76	0.71	0.72
	8.00	383.3	0.77	0.79	0.75	0.75

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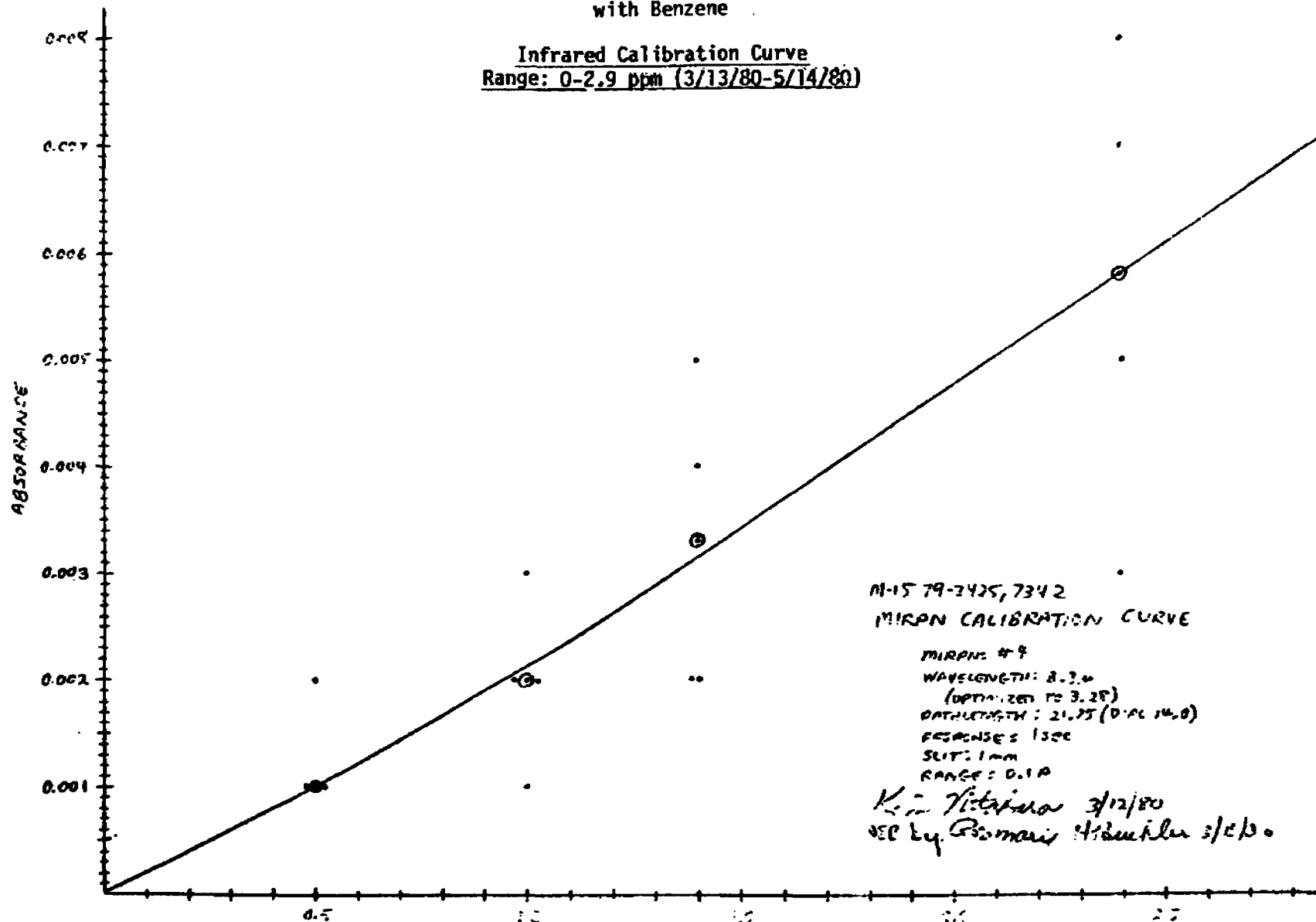
YZ0014371

Appendix A (Cont.)

79-2425

A Female Fertility Study in Rats
with Benzene

Infrared Calibration Curve
Range: 0-2.9 ppm (3/13/80-5/14/80)



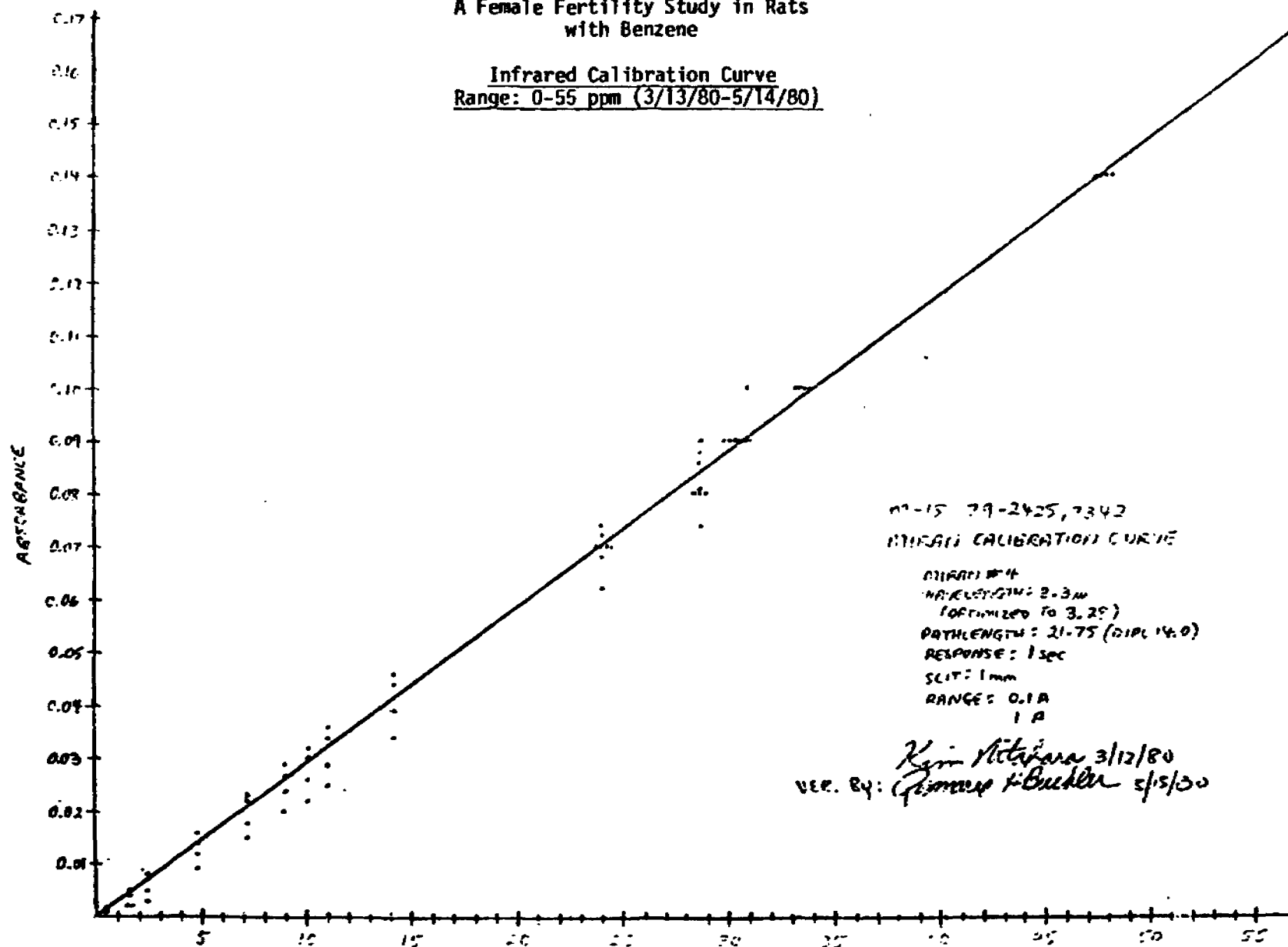
DO 067717
CONFIDENTIAL

YZ0014372

Appendix A (Cont.)
A Female Fertility Study in Rats
with Benzene

79-2425

Infrared Calibration Curve
Range: 0-55 ppm (3/13/80-5/14/80)



79-15 79-2425, 7342

INFRARED CALIBRATION CURVE

WAVENUMBER

WAVELENGTH: 2.3 μ

OPTIMIZED TO 3.25

PATHLENGTH: 21.75 (DIAPHRAGM)

RESPONSE: 1 sec

SPLIT: 1 mm

RANGE: 0.1A

1A

Kim Nishizawa 3/12/80
VER. BY: Jimmy K. Buckler 5/15/80

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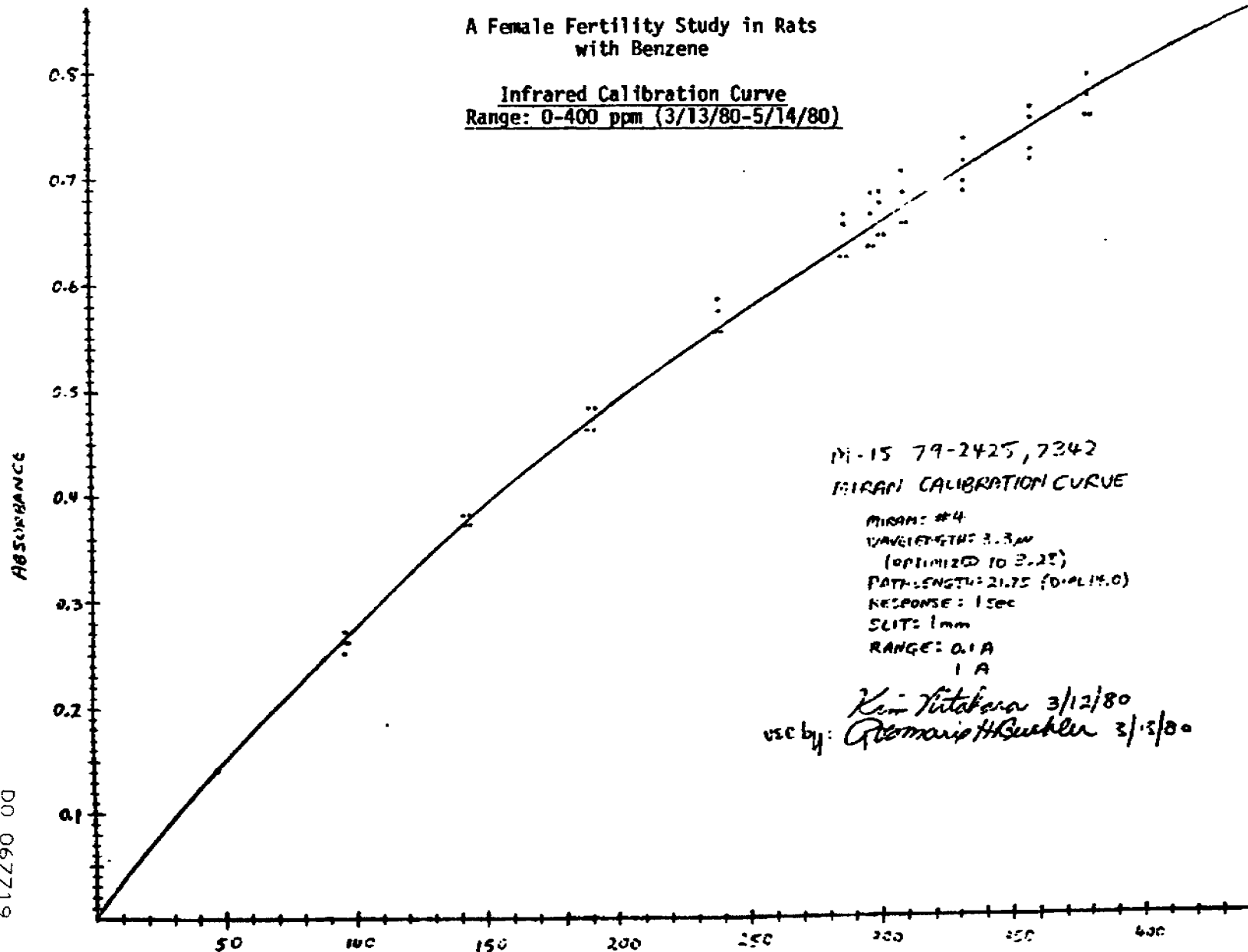
YZ0014373

Appendix A (Cont.)

79-2425

A Female Fertility Study in Rats
with Benzene

Infrared Calibration Curve
Range: 0-400 ppm (3/13/80-5/14/80)



M-15 79-2425, 7342
MIRAN CALIBRATION CURVE

MIRAN: #4
WAVELENGTH: 3.3 μ m
(OPTIMIZED TO 3.25)
PATH LENGTH: 21.75 (DIAL 15.0)
RESPONSE: 1 sec
SLIT: 1 mm
RANGE: 0.1 A
1 A

Kim Tatakura 3/12/80
used by: G. Marie H. Guebler 3/13/80

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YZ0014374

Appendix A (cont.)

79-2425

Table 3

A Female Fertility Study in Rats with Benzene

Individual Exposure Record for Group I

Animal Number	Pre-Mating	Mating		Gestation		Lactation		Post- Lactation	Cumulative Total
	Number of Exposures	Test Days of Exposure	Number of Exposures	Test Days of Exposure	Number of Exposures	Test Days of Exposure	Number of Exposures	Number of Exposures	Total Number of Exposures
225	50	71-72	2	73-93	21	100-116	17	6	96
226	50	-	-	71-91	21	97-113	17	9	97
227	50	71-72	2	73-93	21	100-116	17	6	96
228	50	71	1	72-92	21	99-115	17	7	96
229	50	-	-	71-91	21	97-113	17	9	97
230	50	71-73	3	74-94	21	101-117	17	5	96
231	50	-	-	71-91	21	98-114	17	8	96
232	50	71	1	72-92	21	b	-	-	72
233	50	-	-	71-91	21	98-114	17	8	96
234	50	71-75	5	76-96	21	b	-	-	76
235	50	71-75	5	76-96	21	103-119	17	5	98
236	50	71-75	5	76-96	21	102-118	17	5	98
237	50	-	-	71-91	21	98-114	17	8	96
238	50	71-76	5	77-97	21	103-119	17	6	99
239	50	71-72	2	73-93	21	100-116	17	7	97
240	50	71-73	3	74-94	21	101-117	17	6	97
241 ^a	50	71-93	17	-	-	-	-	-	67
242	50	-	-	71-91	21	97-113	17	10	98
243	50	71-84	10	85-105	21	111-127	17	-	98
244	50	71	1	72-92	21	99-115	17	8	97
245	50	-	-	71-91	21	b	-	-	71
246	50	-	-	71-91	21	98-114	17	9	97
247	50	71	1	72-92	21	98-114	17	9	98
248	50	71-73	3	74-94	21	b	-	-	74
249	50	71-73	3	74-94	21	101-117	17	6	97
250	50	-	-	71-91	21	98-114	17	9	97

^aAnimal not mated, sacrificed 4/9/80.^bAnimal did not deliver pups, no exposures received during lactation or post-lactation period.

Appendix A (cont.)
Table 4
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Pre-Mating Treatment Period
Group II - 1 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran L									
1/7/80	1	1	0.6	0.8	6	3.6	6	3.6	0.6
1/8/80	2	2	0.7	0.7	6	4.2	12	7.8	0.7
1/9/80	3	3	0.5	0.5	6	3.0	18	10.8	0.6
1/10/80	4	4	1.4	0.4	6	8.4	24	19.2	0.8
1/11/80	5	5	0.8	0.5	6	4.8	30	24.0	0.8
1/14/80	8	6	0.5	0.4	6	3.0	36	27.0	0.8
1/15/80	9	7	0.3	0.4	6	1.8	42	28.8	0.7
1/16/80	10	8	0.8	0.6	6	4.8	48	33.6	0.7
1/17/80	11	9	0.5	0.5	6	3.0	54	36.6	0.7
1/18/80	12	10	0.5	0.3	6	3.0	60	39.6	0.7
1/21/80	15	11	1.1	0.7	6	6.6	66	46.2	0.7
1/22/80	16	12	1.0	0.6	6	6.0	72	52.2	0.7
1/23/80	17	13	0.9	0.6	6	5.4	78	57.6	0.7
1/24/80	18	14	1.6	0.5	6	9.6	84	67.2	0.8
1/25/80	19	15	1.2	0.6	6	7.2	90	74.4	0.8
1/28/80	22	16	1.2	0.6	6	7.2	96	81.6	0.9
1/29/80	23	17	1.4	0.4	6	8.4	102	90.0	0.9
1/30/80	24	18	0.9	0.5	6	5.4	108	95.5	0.9
1/31/80	25	19	1.3	0.4	6	7.8	114	103.2	0.9
2/1/80	26	20	1.1	0.4	6	6.6	120	109.8	0.9
2/4/80	29	21	1.5	0.9	6	9.0	126	118.8	0.9
2/5/80	30	22	1.2	0.4	6	7.2	132	126.0	1.0
2/6/80	31	23	0.7	0.5	6	4.2	138	130.2	0.9
2/7/80	32	24	1.5	0.7	6	9.0	144	139.2	1.0
2/8/80	33	25	0.7	0.3	6	4.2	150	143.4	1.0
2/11/80	36	26	0.4	0.4	6	2.4	156	145.8	0.9
2/12/80	37	27	0.8	0.3	6	4.8	162	150.6	0.9
2/13/80	38	28	0.9	0.6	6	5.4	168	156.0	0.9
2/14/80	39	29	0.7	0.9	6	4.2	174	160.2	0.9
2/15/80	40	30	1.1	1.2	6	6.6	180	166.8	0.9
2/18/80	43	31	1.5	0.4	6	9.0	186	175.8	0.9
2/19/80	44	32	0.5	0.6	6	3.0	192	178.8	0.9
2/20/80	45	33	1.2	0.5	6	7.2	198	186.0	0.9

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Appendix A (cont.)
 Table 4 (cont.)
 A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
 Pre-Mating Treatment Period
 Group II - 1 ppm (cont.)

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
2/21/80	46	34	1.2	0.3	6	7.2	204	193.2	0.9
2/22/80	47	35	0.9	0.3	6	5.4	210	198.6	0.9
2/25/80	50	36	1.0	0.4	6	6.0	216	204.6	0.9
2/26/80	51	37	0.8	0.6	6	4.8	222	209.4	0.9
2/27/80	52	38	0.8	0.7	6	4.8	228	214.2	0.9
2/28/80	53	39	1.1	0.4	6	6.6	234	220.8	0.9
2/29/80	54	40	3.5	4.9	6	21.0	240	241.8	1.0
3/3/80	57	41	1.3	0.7	6	7.8	246	249.6	1.0
3/4/80	58	42	1.0	0.4	6	6.0	252	255.6	1.0
3/5/80	59	43	0.8	0.3	6	4.8	258	260.4	1.0
3/6/80	60	44	1.4	0.3	6	8.4	264	268.8	1.0
3/7/80	61	45	0.9	0.8	6	5.4	270	274.2	1.0
3/10/80	64	46	1.1	0.7	6	6.6	276	280.8	1.0
3/11/80	65	47	1.2	0.5	6	7.2	282	288.0	1.0
3/12/80	66	48	1.0	0.4	6	6.0	288	294.0	1.0
Miran 04									
3/13/80	67	49	0.8	1.1	6	4.8	294	298.8	1.0
3/14/80	68	50	0.3	0.4	6	1.8	300	300.6	1.0

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Appendix A (cont.)
Table 5
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Mating Period
Group II - 1 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	0.3	0.4	6	1.8	6	1.8	0.3
3/18/80	72	52	1.4	0.6	6	8.4	12	10.2	0.9
3/19/80	73	53	0.4	0.4	6	2.4	18	12.6	0.7
3/20/80	74	54	0.4	0.6	6	2.4	24	15.0	0.6
3/21/80	75	55 ^a	0.0	0.0	6	0.0	30	15.0	0.5
3/24/80	78	58	0.8	0.5	6	4.8	36	19.8	0.6
3/25/80	79	59	1.0	0.4	6	6.0	42	25.8	0.6
3/26/80	80	60	1.3	0.3	6	7.8	48	33.6	0.7
3/27/80	81	61	0.7	0.5	6	4.2	54	37.8	0.7
3/28/80	82	62 ^a	1.1	0.5	6	6.6	60	44.4	0.7
3/31/80	85	65	0.8	0.3	6	4.8	66	49.2	0.7
4/1/80	86	66	1.0	0.6	6	6.0	72	55.2	0.8
4/2/80	87	67	0.7	0.3	6	4.2	78	59.4	0.8
4/3/80	88	68	0.9	0.6	6	5.4	84	64.8	0.8
4/4/80	89	69 ^a	0.6	0.2	6	3.6	90	68.4	0.8
4/7/80	92	72	0.6	0.5	6	3.6	96	72.0	0.8
4/8/80	93	73	0.2	0.4	6	1.2	102	73.2	0.7

^aExposure numbers 56, 57, 63, 64, 70, and 71 for animals receiving exposure during the gestation period.

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Appendix A (cont.)
Table 6
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Gestation Period
Group II - 1 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	0.3	0.4	6	1.8	6	1.8	0.3
3/18/80	72	52	1.4	0.6	6	8.4	12	10.2	0.9
3/19/80	73	53	0.4	0.4	6	2.4	18	12.6	0.7
3/20/80	74	54	0.4	0.6	6	2.4	24	15.0	0.6
3/21/80	75	55	0.0	0.0	6	0.0	30	15.0	0.5
3/22/80	76	56	1.1	0.1	6	6.6	36	21.6	0.6
3/23/80	77	57	0.6	0.4	6	3.6	42	25.2	0.6
3/24/80	78	58	0.8	0.5	6	4.8	48	30.0	0.6
3/25/80	79	59	1.0	0.4	6	6.0	54	36.0	0.7
3/26/80	80	60	1.3	0.3	6	7.8	60	43.8	0.7
3/27/80	81	61	0.7	0.5	6	4.2	66	48.0	0.7
3/28/80	82	62	1.1	0.5	6	6.6	72	54.6	0.8
3/29/80	83	63	0.9	0.2	6	5.4	78	60.0	0.8
3/30/80	84	64	1.2	0.2	6	7.2	84	67.2	0.8
3/31/80	85	65	0.8	0.3	6	4.8	90	72.0	0.8
4/1/80	86	66	1.0	0.6	6	6.0	96	78.0	0.8
4/2/80	87	67	0.7	0.3	6	4.2	102	82.2	0.8
4/3/80	88	68	0.9	0.6	6	5.4	108	87.6	0.8
4/4/80	89	69	0.6	0.2	6	3.6	114	91.2	0.8
4/5/80	90	70	0.3	0.3	6	1.8	120	93.0	0.8
4/6/80	91	71	0.8	0.3	6	4.8	126	97.8	0.8
4/7/80	92	72	0.6	0.5	6	3.6	132	101.4	0.8
4/8/80	93	73	0.2	0.4	6	1.2	138	102.6	0.7
GC									
4/9/80	94	74	1.0	0.1	6	6.0	144	108.6	0.8
4/10/80	95	75	1.3	0.1	6	7.8	150	116.4	0.8
4/11/80	96	76	1.1	0.1	6	6.6	156	123.0	0.8
4/12/80	97	77	1.3	0.1	6	7.8	162	130.8	0.8

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Appendix A (cont.)
Table 7
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Lactation Period
Group II - 1 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
4/7/80	92	72	0.6	0.5	6	3.6	6	3.6	0.6
4/8/80	93	73	0.2	0.4	6	1.2	12	4.8	0.4
GC									
4/9/80	94	74	1.0	0.1	6	6.0	18	10.8	0.6
4/10/80	95	75	1.3	0.1	6	7.8	24	18.6	0.8
4/11/80	96	76	1.1	0.1	6	6.6	30	25.2	0.8
4/12/80	97	77	1.3	0.1	6	7.8	36	33.0	0.9
4/13/80	98	78	1.1	0.1	6	6.6	42	39.6	0.9
4/14/80	99	79	1.2	0.1	6	7.2	48	46.8	1.0
4/15/80	100	80	1.1	0.1	6	6.6	54	53.4	1.0
4/16/80	101	81	1.2	0.1	6	7.2	60	60.6	1.0
4/17/80	102	82	1.2	0.2	6	7.2	66	67.8	1.0
4/18/80	103	83	1.3	0.1	6	7.8	72	75.6	1.0
4/19/80	104	84	1.1	0.2	6	6.6	78	82.2	1.1
4/20/80	105	85	1.4	0.2	6	8.4	84	90.6	1.1
4/21/80	106	86	1.2	0.2	6	7.2	90	97.6	1.1
4/22/80	107	87	1.2	0.1	6	7.2	96	105.0	1.1
4/23/80	108	88	1.3	0.3	6	7.8	102	112.8	1.1
4/24/80	109	89	1.2	0.2	6	7.2	108	120.0	1.1
4/25/80	110	90	1.2	0.1	6	7.2	114	127.2	1.1
4/26/80	111	91	1.1	0.1	6	6.6	120	133.8	1.1
4/27/80	112	92	1.2	0.2	6	7.2	126	141.0	1.1
4/28/80	113	93	1.2	0.2	6	7.2	132	148.2	1.1
4/29/80	114	94	1.2	0.2	6	7.2	138	155.4	1.1
4/30/80	115	95	1.2	0.1	6	7.2	144	162.6	1.1
5/1/80	116	96	1.2	0.2	6	7.2	150	169.8	1.1
5/2/80	117	97	1.2	0.2	6	7.2	156	177.0	1.1
5/3/80	118	98	1.3	0.3	6	7.8	162	184.8	1.1
5/4/80	119	99	1.2	0.2	6	7.2	168	192.0	1.1
5/5/80	120	100	1.3	0.3	6	7.8	174	199.8	1.1
5/6/80	121	101	1.3	0.2	6	7.8	180	207.6	1.2
5/7/80	122	102	1.3	0.1	6	7.8	186	215.4	1.2
5/8/80	123	103	1.3	0.2	6	7.8	192	223.2	1.2
5/9/80	124	104	1.3	0.1	6	7.8	198	231.0	1.2
5/12/80	127	105	1.2	0.1	6	7.2	204	238.2	1.2

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Appendix A (cont.)
Table 8
A Female Fertility Study in Rats with Benzene

79-2425

Individual Exposure Record for Group II

Pre-Mating ¹			Mating ¹			Gestation ²			Lactation ³			Post-Lactation ⁴		Cumulative Total ⁵	
An. No.	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)
425	50	1.0	71-73	3	0.7	74-94	21	0.8	101-117	17	1.2	5	1.3	96	1.0
426	50	1.0	-	-	-	71-91	21	0.8	98-114	17	1.2	8	1.3	96	1.0
427	50	1.0	71-73	3	0.7	74-94	21	0.8	b	-	-	-	-	74	0.9
428	50	1.0	71-72	2	0.9	73-93	21	0.7	100-116	17	1.2	6	1.3	96	1.0
429	50	1.0	71	1	0.3	72-92	21	0.8	99-115	17	1.2	7	1.3	96	1.0
430	50	1.0	71-76	5	0.5	77-97	21	0.9	b	-	-	-	-	76	0.9
431	50	1.0	71-72	2	0.9	73-93	21	0.7	99-115	17	1.2	7	1.3	97	1.0
432	50	1.0	71	1	0.3	72-92	21	0.8	98-114	17	1.2	8	1.3	97	1.0
433	50	1.0	71-74	4	0.6	75-95	21	0.8	102-118	17	1.2	5	1.3	97	1.0
434	50	1.0	71	1	0.3	72-92	21	0.8	98-114	17	1.2	8	1.3	97	1.0
435	50	1.0	71-73	3	0.7	74-94	21	0.8	101-117	17	1.2	5	1.3	96	1.0
436	50	1.0	71-73	3	0.7	74-94	21	0.8	101-117	17	1.2	5	1.3	96	1.0
437 ^a	50	1.0	71-93	17	0.7	-	-	-	-	-	-	-	-	67	0.9
438	50	1.0	71-72	2	0.9	73-93	21	0.7	100-116	17	1.2	6	1.3	96	1.0
439	50	1.0	71-73	3	0.7	74-94	21	0.8	100-116	17	1.2	7	1.3	98	1.0
440	50	1.0	71-72	2	0.9	73-93	21	0.7	100-116	17	1.2	7	1.3	97	1.0
441	50	1.0	71-72	2	0.9	73-93	21	0.7	100-116	17	1.2	7	1.3	97	1.0
442	50	1.0	-	-	-	71-91	21	0.8	98-114	17	1.2	9	1.3	97	1.0
443	50	1.0	71-73	3	0.7	74-94	21	0.8	101-117	17	1.2	6	1.3	97	1.0
444	50	1.0	-	-	-	71-91	21	0.8	98-114	17	1.2	9	1.3	97	1.0
445	50	1.0	-	-	-	71-91	21	0.8	98-114	17	1.2	9	1.3	97	1.0
446 ^a	50	1.0	71-93	17	0.7	-	-	-	-	-	-	-	-	67	0.9
447	50	1.0	71-74	4	0.6	75-95	21	0.8	102-118	17	1.2	6	1.3	98	1.0
448	50	1.0	71	1	0.3	72-92	21	0.8	98-114	17	1.2	7	1.3	96	1.0
449	50	1.0	71-75	5	0.5	76-96	21	0.9	104-120	17	1.2	5	1.3	98	1.0
450	50	1.0	-	-	-	71-91	21	0.8	98-114	17	1.2	9	1.3	97	1.0

¹Individual cumulative exposure concentrations taken directly from Tables 4 and 5 for the pre-mating and mating period, respectively.

²Individual cumulative exposure concentrations were calculated using Table 6 for the gestation period. Using animal number 425 as an example, a total of 21 exposures were received during the gestation period (Days 74-94, inclusive). During this period, a total of 126 exposure hours (144 - 18 = 126) and a total of 136.2 concentration hours (148.8 - 12.6 = 136.2) were accumulated. The cumulative exposure concentration for this period was 1.1 ppm (136.2 ÷ 126 = 1.1).

³Individual cumulative exposure concentrations were calculated using Table 7 for the lactation period using the procedure described for the gestation period.

⁴Post-lactation concentrations were obtained by averaging the daily exposure concentrations that were obtained post-lactation for each animal.

⁵The total cumulative exposure concentration was calculated by dividing the total cumulative exposure concentration of the pre-mating, mating, gestation, lactation, and post-lactation periods by the total number of exposures.

^aAnimal not mated, sacrificed 4/9/80.

^bAnimal did not deliver pups, no exposures received during lactation or post-lactation period.

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Appendix A (cont.)
Table 9
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Pre-mating Treatment Period
Group III - 10 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran L									
1/7/80	1	1	9.4	0.8	6	56.4	6	56.4	9.4
1/8/80	2	2	8.6	2.7	6	51.6	12	108.0	9.0
1/9/80	3	3	8.7	1.0	6	52.2	18	160.2	8.9
1/10/80	4	4	9.7	0.4	6	58.2	24	218.4	9.1
1/11/80	5	5	7.8	2.1	6	46.8	30	265.2	8.8
1/14/80	8	6	8.6	0.8	6	51.6	36	316.8	8.8
1/15/80	9	7	8.7	0.7	6	52.2	42	369.0	8.8
1/16/80	10	8	9.2	0.6	6	55.2	48	424.2	8.8
1/17/80	11	9	7.4	0.4	6	44.4	54	468.6	8.7
1/18/80	12	10	8.6	0.5	6	51.6	60	520.2	8.7
1/21/80	15	11	9.6	0.3	6	57.6	66	577.8	8.8
1/22/80	16	12	8.9	0.4	6	53.4	72	631.2	8.8
1/23/80	17	13	8.5	0.7	6	51.0	78	682.2	8.7
1/24/80	18	14	9.7	0.4	6	58.2	84	740.4	8.8
1/25/80	19	15	11.5	0.7	6	69.0	90	809.4	9.0
1/28/80	22	16	12.4	1.6	6	74.4	96	883.8	9.2
1/29/80	23	17	10.4	1.4	6	62.4	102	946.2	9.3
1/30/80	24	18	10.1	1.1	6	60.6	108	1006.8	9.3
1/31/80	25	19	9.8	2.1	6	58.8	114	1065.6	9.3
2/1/80	26	20	9.3	1.6	6	55.8	120	1121.4	9.3
2/4/80	29	21	10.2	3.4	6	61.2	126	1182.6	9.4
2/5/80	30	22	12.7	2.6	6	76.2	132	1258.8	9.5
2/6/80	31	23	8.6	0.9	6	51.6	138	1310.4	9.5
2/7/80	32	24	9.5	0.8	6	57.0	144	1367.4	9.5
2/8/80	33	25	10.0	1.4	6	60.0	150	1427.4	9.5
2/11/80	36	26	9.4	1.0	6	56.4	156	1483.8	9.5
2/12/80	37	27	8.5	2.9	6	51.0	162	1534.8	9.5
2/13/80	38	28	11.3	2.3	6	67.8	168	1602.6	9.5
2/14/80	39	29	9.6	1.1	6	57.6	174	1660.2	9.5
2/15/80	40	30	10.4	1.6	6	62.4	180	1722.6	9.6
2/18/80	43	31	10.6	1.3	6	63.6	186	1786.2	9.6
2/19/80	44	32	8.9	0.6	6	53.4	192	1839.6	9.6
2/20/80	45	33	10.5	1.3	6	63.0	198	1902.6	9.6
2/21/80	46	34	11.2	1.2	6	67.2	204	1969.8	9.7
2/22/80	47	35	9.7	1.3	6	58.2	210	2028.0	9.7

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Appendix A (cont.)
 Table 9 (cont.)
 A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
 Pre-mating Treatment Period
 Group III - 10 ppm (cont.)

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
2/25/80	50	36	10.1	0.7	6	60.6	216	2088.6	9.7
2/26/80	51	37	10.2	1.6	6	61.2	222	2149.8	9.7
2/27/80	52	38	10.3	0.7	6	61.8	228	2211.6	9.7
2/28/80	53	39	10.4	0.8	6	62.4	234	2274.0	9.7
2/29/80	54	40	8.1	4.0	6	48.6	240	2322.6	9.7
3/3/80	57	41	10.2	1.2	6	61.2	246	2383.8	9.7
3/4/80	58	42	10.4	0.6	6	62.4	252	2446.2	9.7
3/5/80	59	43	10.6	0.5	6	63.6	258	2509.8	9.7
3/6/80	60	44	10.6	0.7	6	63.6	264	2573.4	9.7
3/7/80	61	45	10.4	1.0	6	62.4	270	2635.8	9.8
3/10/80	64	46	9.4	0.7	6	56.4	276	2692.2	9.8
3/11/80	65	47	11.4	1.4	6	68.4	282	2760.6	9.8
3/12/80	66	48	9.6	0.6	6	57.6	288	2818.2	9.8
Miran 04									
3/13/80	67	49	10.3	1.0	6	61.8	294	2880.0	9.8
3/14/80	68	50	9.3	0.9	6	55.8	300	2935.8	9.8

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Appendix A (cont.)
Table 10
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Mating Period
Group III - 10 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	9.1	0.6	6	54.6	6	54.6	9.1
3/18/80	72	52	9.5	0.8	6	57.0	12	111.6	9.3
3/19/80	73	53	9.3	1.2	6	55.8	18	167.4	9.3
3/20/80	74	54	9.3	2.1	6	55.8	24	223.2	9.3
3/21/80	75	55 ^a	8.9	1.6	6	53.4	30	276.6	9.2
3/24/80	78	58	9.8	0.5	6	58.8	36	335.4	9.3
3/25/80	79	59	10.2	0.4	6	61.2	42	396.6	9.4
3/26/80	80	60	11.0	0.7	6	66.0	48	462.6	9.6
3/27/80	81	61	10.0	0.7	6	60.0	54	522.6	9.7
3/28/80	82	62 ^a	12.1	1.4	6	72.6	60	595.2	9.9
3/31/80	85	65	8.0	2.7	6	48.0	66	643.2	9.7
4/1/80	86	66	10.2	1.3	6	61.2	72	704.4	9.8
4/2/80	87	67	9.9	0.8	6	59.4	78	763.8	9.8
4/3/80	88	68	9.5	1.0	6	57.0	84	820.8	9.8
4/4/80	89	69	9.7	0.9	6	58.2	90	879.0	9.8

^aExposure numbers 56, 57, 63, and 64 for animals receiving exposure during the gestation period.

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Appendix A (cont.)
Table 11
A Female Fertility Study in Rats with Benzene

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Cumulative Exposure Record
Gestation Period
Group III - 10 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	9.1	0.6	6	54.6	6	54.6	9.1
3/18/80	72	52	9.5	0.8	6	57.0	12	111.6	9.3
3/19/80	73	53	9.3	1.2	6	55.8	18	167.4	9.3
3/20/80	74	54	9.3	2.1	6	55.8	24	223.2	9.3
3/21/80	75	55	8.9	1.6	6	53.4	30	276.6	9.2
3/22/80	76	56	10.0	0.8	6	60.0	36	336.6	9.3
3/23/80	77	57	8.8	0.8	6	52.8	42	389.4	9.3
3/24/80	78	58	9.8	0.5	6	58.8	48	448.2	9.3
3/25/80	79	59	10.2	0.4	6	61.2	54	509.4	9.4
3/26/80	80	60	11.0	0.7	6	66.0	60	575.4	9.6
3/27/80	81	61	10.0	0.7	6	60.0	66	635.4	9.6
3/28/80	82	62	12.1	1.4	6	72.6	72	708.0	9.8
3/29/80	83	63	9.7	0.7	6	58.2	78	766.2	9.8
3/30/80	84	64	9.9	1.0	6	59.4	84	825.6	9.8
3/31/80	85	65	8.0	2.7	6	48.0	90	873.6	9.7
4/1/80	86	66	10.2	1.3	6	61.2	96	934.8	9.7
4/2/80	87	67	9.9	0.8	6	59.4	102	994.2	9.7
4/3/80	88	68	9.5	1.0	6	57.0	108	1051.2	9.7
4/4/80	89	69	9.7	0.9	6	58.2	114	1109.4	9.7
4/5/80	90	70	8.9	1.2	6	53.4	120	1162.8	9.7
4/6/80	91	71	9.7	0.5	6	58.2	126	1221.0	9.7
4/7/80	92	72	9.7	1.0	6	58.2	132	1279.2	9.7
4/8/80	93	73	8.8	0.7	6	52.8	138	1332.0	9.7
GC									
4/9/80	94	74	11.9	0.8	6	71.4	144	1403.4	9.7
4/10/80	95	75	13.3	0.4	6	79.8	150	1483.2	9.9
4/11/80	96	76	12.9	0.7	6	77.4	156	1560.6	10.0
4/12/80	97	77	12.9	1.7	6	77.4	162	1638.0	10.1
4/13/80	98	78	12.8	0.8	6	76.8	168	1714.8	10.2
4/14/80	99	79	14.1	1.7	6	84.6	174	1799.4	10.3
4/15/80	100	80	12.5	1.0	6	75.0	180	1874.4	10.4
4/16/80	101	81	12.8	1.3	6	76.8	186	1951.2	10.5
4/17/80	102	82	13.8	0.9	6	82.8	192	2034.0	10.6
4/18/80	103	83	12.3	1.3	6	73.8	198	2107.8	10.6
4/19/80	104	84	12.2	1.3	6	73.2	204	2181.0	10.7
4/20/80	105	85	12.6	0.7	6	75.6	210	2256.6	10.7
4/21/80	106	86	12.7	0.6	6	76.2	216	2332.8	10.8
4/22/80	107	87	13.1	1.9	6	78.6	222	2411.4	10.9

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Appendix A (cont.)

Table 12

A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record

Lactation Period

Group III - 10 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
4/7/80	92	72	9.7	1.0	6	58.2	6	58.2	9.7
4/8/80	93	73	8.8	0.7	6	52.8	12	111.0	9.3
GC									
4/9/80	94	74	11.9	0.8	6	71.4	18	182.4	10.1
4/10/80	95	75	13.3	0.4	6	79.8	24	262.2	10.9
4/11/80	96	76	12.9	0.7	6	77.4	30	339.6	11.3
4/12/80	97	77	12.9	1.7	6	77.4	36	417.0	11.6
4/13/80	98	78	12.8	0.8	6	76.8	42	493.8	11.8
4/14/80	99	79	14.1	1.7	6	84.6	48	578.4	12.1
4/15/80	100	80	12.5	1.0	6	75.0	54	653.4	12.1
4/16/80	101	81	12.8	1.3	6	76.8	60	730.2	12.2
4/17/80	102	82	13.8	0.9	6	82.8	66	813.0	12.3
4/18/80	103	83	12.3	1.3	6	73.8	72	886.8	12.3
4/19/80	104	84	12.2	1.3	6	73.2	78	960.0	12.3
4/20/80	105	85	12.6	0.7	6	75.6	84	1035.6	12.3
4/21/80	106	86	12.7	0.6	6	76.2	90	1111.8	12.4
4/22/80	107	87	13.1	1.9	6	78.6	96	1190.4	12.4
4/23/80	108	88	13.9	1.4	6	83.4	102	1273.8	12.5
4/24/80	109	89	12.8	1.0	6	76.8	108	1350.6	12.5
4/25/80	110	90	12.4	0.5	6	74.4	114	1425.0	12.5
4/26/80	111	91	12.3	0.6	6	73.8	120	1498.8	12.5
4/27/80	112	92	13.1	1.8	6	78.6	126	1577.4	12.5
4/28/80	113	93	12.9	1.0	6	77.4	132	1654.8	12.5
4/29/80	114	94	11.9	2.7	6	71.4	138	1726.2	12.5
4/30/80	115	95	14.0	0.7	6	84.0	144	1810.2	12.6
5/1/80	116	96	15.2	2.7	6	91.2	150	1901.4	12.7
5/2/80	117	97	13.1	1.0	6	78.6	156	1980.0	12.7
5/3/80	118	98	13.1	1.5	6	78.6	162	2058.6	12.7
5/4/80	119	99	10.9	4.3	6	65.4	168	2124.0	12.6
5/5/80	120	100	14.5	1.0	6	87.0	174	2211.0	12.7
5/6/80	121	101	13.0	1.5	6	78.0	180	2289.0	12.7
5/7/80	122	102	13.8	0.8	6	82.8	186	2371.8	12.8
5/8/80	123	103	14.7	1.3	6	88.2	192	2460.0	12.8
5/9/80	124	104	14.1	1.4	6	84.6	198	2544.6	12.9
5/10/80	125	105	10.7	1.5	6	64.2	204	2608.8	12.8
5/11/80	126	106	9.5	1.4	6	57.0	210	2665.8	12.7
5/12/80	127	107	13.0	0.8	6	78.0	216	2743.8	12.7
5/13/80	128	108	14.2	1.3	6	85.2	222	2829.0	12.7
5/14/80	129	109	12.7	2.9	6	76.2	228	2905.2	12.7

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Appendix A (cont.)
Table 13
A Female Fertility Study in Rats with Rensene

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Individual Exposure Record for Group III

Pre-Mating ⁶			Mating ⁶			Gestation ⁷			Lactation ⁸			Post-Lactation ⁹		Cumulative Total ¹⁰	
An. No.	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)
625	50	9.8	71-72	2	9.3	73-93	21	9.7	100-116	17	13.0	8	13.9	96	10.6
626	50	9.8	71-75	14	9.7	86-106	21	11.6	113-129	17	13.0	-	-	102	10.7
627	50	9.8	71	1	9.1	72-92	21	9.7	98-114	17	12.8	8	14.1	97	10.7
628	50	9.8	71	-	-	72-92	21	9.7	98-114	17	12.8	8	14.1	96	10.7
629	50	9.8	71-73	3	9.3	74-94	21	9.8	-	-	-	-	-	74	9.8
630	50	9.8	71	-	-	72-92	21	9.7	98-114	17	12.8	8	14.1	96	10.7
631	50	9.8	71-77	5	9.2	74-94	21	10.5	105-121	17	13.0	3	14.2	96	10.6
632	50	9.8	71	1	9.1	72-92	21	9.7	99-115	17	12.9	7	14.1	96	10.6
633	50	9.8	71-75	5	9.2	76-96	21	10.2	103-119	17	12.9	5	14.0	98	10.6
634	50	9.8	71-81	9	9.7	82-102	21	11.1	109-125	17	13.1	-	-	97	10.7
635	50	9.8	71	1	9.1	72-92	21	9.7	99-115	17	12.9	8	14.1	97	10.6
636	50	9.8	71-73	3	9.3	74-94	21	9.8	102-118	17	13.0	5	14.0	96	10.6
637	50	9.8	71-73	3	9.3	74-94	21	9.8	101-117	17	13.0	5	14.0	96	10.6
638	50	9.8	71-86	13	9.8	87-107	21	11.7	-	-	-	-	-	84	10.3
639	50	9.8	71-74	5	9.2	77-97	21	10.3	104-120	17	13.0	5	13.7	98	10.6
640	50	9.8	71	1	9.1	72-92	21	9.7	99-115	17	12.9	8	13.9	97	10.7
641	50	9.8	71-72	2	9.3	73-93	21	9.7	100-116	17	13.0	7	13.7	97	10.6
642	50	9.8	71-73	3	9.3	74-94	21	9.8	102-118	17	13.0	5	14.0	96	10.6
643	50	9.8	71	1	9.1	72-92	21	9.7	99-115	17	12.9	8	13.9	97	10.5
644	50	9.8	71-77	5	9.2	78-98	21	10.5	104-120	17	13.0	5	13.7	98	10.7
645	50	9.8	71	-	-	72-92	21	9.7	94-114	17	12.8	9	13.9	97	10.7
646	50	9.8	71-72	2	9.3	73-93	21	9.7	99-115	17	12.9	8	13.9	96	10.6
647	50	9.8	71-72	2	9.3	73-93	21	9.7	100-116	17	13.0	7	13.7	97	10.6
648	50	9.8	71-72	2	9.3	73-93	21	9.7	100-116	17	13.0	7	13.7	97	10.6
649	50	9.8	71	1	9.1	72-92	21	9.7	99-115	17	12.9	8	13.9	97	10.7
650	50	9.8	71-76	5	9.2	77-97	21	10.3	103-119	17	12.9	5	13.7	98	10.6

⁶Individual cumulative exposure concentrations taken directly from Tables 9 and 10 for the pre-mating and mating period, respectively.

⁷Individual cumulative exposure concentrations were calculated using Table 11 for the gestation period. Using animal number 625 as an example a total of 21 exposures were received during the gestation period (Days 73-93, inclusive). During this period, a total of 126 exposure hours (138-126) and a total of 1220.4 concentration hours (1332.8-111.6-1220.4) were accumulated. The cumulative exposure concentration for this period was 9.7 ppm (1220.4/126=9.7).

⁸Individual cumulative exposure concentrations were calculated using Table 12 for the lactation period using the procedure described for the gestation period.

⁹Post-lactation concentrations were obtained by averaging the daily exposure concentrations that were obtained post-lactation for each animal.

¹⁰The total cumulative exposure concentration was calculated by dividing the total cumulative exposure concentration of the pre-mating, mating, gestation, lactation, and post-lactation periods by the total number of exposures.

¹¹Animal did not deliver pups, no exposures received during lactation or post-lactation period.

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Appendix A (cont.)
Table 14
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Pre-Mating Treatment Period
Group IV - 30 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran L									
1/7/80	1	1	26.3	8.5	6	157.8	6	157.8	26.3
1/8/80	2	2	35.4	7.6	6	212.4	12	370.2	30.9
1/9/80	3	3	32.7	1.3	6	196.2	18	566.4	31.5
1/10/80	4	4	32.2	2.0	6	193.2	24	759.6	31.7
1/11/80	5	5	28.5	5.5	6	171.0	30	930.6	31.0
1/14/80	8	6	32.7	2.4	6	196.2	36	1126.8	31.3
1/15/80	9	7	32.2	2.0	6	193.2	42	1320.0	31.4
1/16/80	10	8	28.5	6.8	6	171.0	48	1491.0	31.1
1/17/80	11	9	30.6	2.7	6	183.6	54	1674.6	31.0
1/18/80	12	10	30.1	2.6	6	180.6	60	1855.2	30.9
1/21/80	15	11	29.0	6.7	6	174.0	66	2029.2	30.7
1/22/80	16	12	29.3	2.2	6	175.8	72	2205.0	30.6
1/23/80	17	13	29.5	2.4	6	177.0	78	2382.0	30.5
1/24/80	18	14	29.5	1.3	6	177.0	84	2559.0	30.5
1/25/80	19	15	29.5	1.3	6	177.0	90	2736.0	30.4
1/28/80	22	16	32.2	2.0	6	193.2	96	2929.2	30.5
1/29/80	23	17	32.8	3.2	6	196.8	102	3126.0	30.6
1/30/80	24	18	29.0	2.9	6	174.0	108	3300.0	30.6
1/31/80	25	19	30.6	4.0	6	183.6	114	3483.6	30.6
2/1/80	26	20	32.2	2.0	6	193.2	120	3676.8	30.6
2/4/80	29	21	33.3	4.8	6	199.8	126	3876.6	30.7
2/5/80	30	22	32.2	0.0	6	193.2	132	4069.8	30.8
2/6/80	31	23	31.7	1.3	6	190.2	138	4260.0	30.9
2/7/80	32	24	30.1	1.7	6	180.6	144	4440.6	30.8
2/8/80	33	25	30.6	1.8	6	183.6	150	4624.2	30.8
2/11/80	36	26	29.5	1.3	6	177.0	156	4801.2	30.8
2/12/80	37	27	31.1	2.6	6	186.6	162	4987.8	30.8
2/13/80	38	28	30.6	3.4	6	183.6	168	5171.4	30.8
2/14/80	39	29	29.0	2.1	6	174.0	174	5345.4	30.7
2/15/80	40	30	29.5	1.3	6	177.0	180	5522.4	30.7
2/18/80	43	31	29.5	1.3	6	177.0	186	5699.4	30.6
2/19/80	44	32	29.5	1.3	6	177.0	192	5876.4	30.6
2/20/80	45	33	29.5	1.3	6	177.0	198	6053.4	30.6

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Appendix A (cont.)
 Table 14 (cont.)
 A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
 Pre-Mating Treatment Period
 Group IV - 30 ppm (cont.)

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
2/21/80	46	34	30.1	2.6	6	180.6	204	6234.0	30.6
2/22/80	47	35	29.5	1.3	6	177.0	210	6411.0	30.5
2/25/80	50	36	29.5	1.3	6	177.0	216	6588.0	30.5
2/26/80	51	37	29.5	2.4	6	177.0	222	6765.0	30.5
2/27/80	52	38	29.0	2.1	6	174.0	228	6939.0	30.4
2/28/80	53	39	30.1	1.7	6	180.6	234	7119.6	30.4
2/29/80	54	40	28.5	1.3	6	171.0	240	7290.6	30.4
3/3/80	57	41	30.6	2.7	6	183.6	246	7474.2	30.4
3/4/80	58	42	30.1	1.7	6	180.6	252	7654.8	30.4
3/5/80	59	43	29.5	1.3	6	177.0	258	7831.8	30.4
3/6/80	60	44	30.1	1.7	6	180.6	264	8012.4	30.4
3/7/80	61	45	29.5	1.3	6	177.0	270	8189.4	30.3
3/10/80	64	46	29.0	2.1	6	174.0	276	8363.4	30.3
3/11/80	65	47	29.5	1.3	6	177.0	282	8540.4	30.3
3/12/80	66	48	30.1	3.3	6	180.6	288	8721.0	30.3
Miran 04									
3/13/80	67	49	30.1	1.4	6	180.6	294	8901.6	30.3
3/14/80	68	50	30.7	2.2	6	184.2	300	9085.8	30.3

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Appendix A (cont.)
Table 15
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Mating Period
Group IV - 30 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	33.0	1.8	6	198.0	6	198.0	33.0
3/18/80	72	52	30.7	3.1	6	184.2	12	382.2	31.9
3/19/80	73	53	30.7	2.2	6	184.2	18	566.4	31.5
3/20/80	74	54	31.9	2.8	6	191.4	24	757.8	31.6
3/21/80	75	55 ^a	30.2	2.6	6	181.2	30	939.0	33.0
3/24/80	78	58	30.7	0.0	6	184.2	36	1123.2	31.2
3/25/80	79	59	31.3	1.4	6	187.8	42	1311.0	31.2
3/26/80	80	60	32.4	2.9	6	194.4	48	1505.4	31.4
3/27/80	81	61	29.6	1.8	6	177.6	54	1683.0	31.2
3/28/80	82	62 ^a	30.2	2.6	6	181.2	60	1864.2	31.1
3/31/80	85	65	29.6	1.8	6	177.6	66	2041.8	30.9
4/1/80	86	66	31.3	3.4	6	187.8	72	2229.6	31.0
4/2/80	87	67	31.3	1.4	6	187.8	78	2417.4	31.0
4/3/80	88	68	30.1	1.4	6	180.6	84	2598.0	30.9
4/4/80	89	69	30.7	2.2	6	184.2	90	2782.2	30.9

^aExposure numbers 56, 57, 63, and 64 for animals receiving exposure during the gestation period.

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Appendix A (cont.)
Table 16
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Gestation Period
Group IV - 30 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	33.0	1.8	6	198.0	6	198.0	33.0
3/18/80	72	52	30.7	3.1	6	184.2	12	382.2	31.9
3/19/80	73	53	30.7	2.2	6	184.2	18	566.4	31.5
3/20/80	74	54	31.9	2.8	6	191.4	24	757.8	31.6
3/21/80	75	55	30.2	2.6	6	181.2	30	939.0	31.3
3/22/80	76	56	32.4	4.2	6	194.4	36	1133.4	31.5
3/23/80	77	57	30.1	1.4	6	180.6	42	1314.0	31.3
3/24/80	78	58	30.7	0.0	6	184.2	48	1498.2	31.2
3/25/80	79	59	31.3	1.4	6	187.8	54	1686.0	31.2
3/26/80	80	60	32.4	2.9	6	194.4	60	1880.4	31.3
3/27/80	81	61	29.6	1.8	6	177.6	66	2058.0	31.2
3/28/80	82	62	30.2	2.6	6	181.2	72	2239.2	31.1
3/29/80	83	63	30.2	2.6	6	181.2	78	2420.4	31.0
3/30/80	84	64	31.3	1.4	6	187.8	84	2608.2	31.1
3/31/80	85	65	29.6	1.8	6	177.6	90	2785.8	31.0
4/1/80	86	66	31.3	3.4	6	187.8	96	2973.6	31.0
4/2/80	87	67	31.3	1.4	6	187.8	102	3161.4	31.0
4/3/80	88	68	30.1	1.4	6	180.6	108	3342.0	30.9
4/4/80	89	69	30.7	2.2	6	184.2	114	3526.2	30.9
4/5/80	90	70	31.3	5.0	6	187.8	120	3714.0	31.0
4/6/80	91	71	31.3	1.4	6	187.8	126	3901.8	31.0
4/7/80	92	72	30.7	2.2	6	184.2	132	4086.0	31.0
4/8/80	93	73	29.6	1.8	6	177.6	138	4263.6	31.0
4/9/80	94	74	31.9	2.8	6	191.4	144	4455.0	30.9
4/10/80	95	75	30.7	2.2	6	184.2	150	4639.2	30.9
4/11/80	96	76	31.3	3.4	6	187.8	156	4827.0	30.9
4/12/80	97	77	29.6	1.8	6	177.6	162	5004.6	31.0
4/13/80	98	78	30.2	2.6	6	181.2	168	5185.8	30.9

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Appendix A (cont.)
Table 17
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Lactation Period
Group IV - 30 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
4/7/80	92	72	30.7	2.2	6	184.2	6	184.2	30.7
4/8/80	93	73	29.6	1.8	6	177.6	12	361.8	30.2
4/9/80	94	74	31.9	2.8	6	191.4	18	553.2	30.7
4/10/80	95	75	30.7	2.2	6	184.2	24	737.4	30.7
4/11/80	96	76	31.3	3.4	6	187.8	30	925.2	30.8
4/12/80	97	77	29.6	1.8	6	177.6	36	1102.8	30.6
4/13/80	98	78	30.2	2.6	6	181.2	42	1284.0	30.6
4/14/80	99	79	31.9	4.7	6	191.4	48	1475.4	30.7
4/15/80	100	80	29.0	1.9	6	174.0	54	1649.4	30.5
4/16/80	101	81	31.3	3.4	6	187.8	60	1837.2	30.6
4/17/80	102	82	31.9	2.8	6	191.4	66	2028.6	30.7
4/18/80	103	83	29.6	1.8	6	177.6	72	2206.2	30.6
4/19/80	104	84	31.9	5.2	6	191.4	78	2397.6	30.7
4/20/80	105	85	30.7	2.2	6	184.2	84	2581.8	30.7
4/21/80	106	86	30.1	1.4	6	180.6	90	2762.4	30.7
4/22/80	107	87	32.4	4.2	6	194.4	96	2956.8	30.8
4/23/80	108	88	30.1	1.4	6	180.6	102	3137.4	30.8
4/24/80	109	89	30.2	2.6	6	181.2	108	3318.6	30.7
4/25/80	110	90	31.9	2.8	6	191.4	114	3510.0	30.8
4/26/80	111	91	31.3	1.4	6	187.8	120	3697.8	30.8
4/27/80	112	92	30.7	3.8	6	184.2	126	3882.0	30.8
4/28/80	113	93	31.3	1.4	6	187.8	132	4069.8	30.8
4/29/80	114	94	29.6	1.8	6	177.6	138	4247.4	30.8
4/30/80	115	95	30.1	1.4	6	180.6	144	4428.0	30.8
5/1/80	116	96	30.7	2.2	6	184.2	150	4612.2	30.7
5/2/80	117	97	29.6	1.8	6	177.6	156	4789.8	30.7
5/3/80	118	98	30.7	2.2	6	184.2	162	4974.0	30.7
5/4/80	119	99	30.1	1.4	6	180.6	168	5154.6	30.7
5/5/80	120	100	32.4	4.2	6	194.4	174	5349.0	30.7
5/6/80	121	101	30.2	2.6	6	181.2	180	5530.2	30.7
5/7/80	122	102	30.7	2.2	6	184.2	186	5714.4	30.7
5/8/80	123	103	31.9	2.8	6	191.4	192	5905.8	30.8
5/9/80	124	104	30.1	1.4	6	180.6	198	6086.4	30.7
5/12/80	127	105	30.2	2.6	6	181.2	204	6267.6	30.7

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Appendix A (cont.)

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Table 18

A Female Fertility Study in Rats with Benzene

Individual Exposure Record for Group IV

Pre-Mating ¹¹			Mating ¹¹			Gestation ¹²			Lactation ¹³			Post-Lactation ¹⁴		Cumulative Total ¹⁵	
An. No.	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)
825	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
826	50	30.3	71-76	5	33.0	77-97	21	30.6	104-120	17	30.8	4	30.7	97	30.6
827	50	30.3	71-74	4	31.6	75-95	21	30.8	102-118	17	30.8	5	31.1	97	30.6
828	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
829	22 ^a	30.8	-	-	-	-	-	-	-	-	-	-	-	22	30.8
830	50	30.3	-	-	-	71-91	21	31.0	98-114	17	30.8	8	30.7	96	30.6
831	50	30.3	71-77	5	33.0	78-98	21	30.7	105-121	17	30.7	3	30.9	96	30.6
832	50	30.3	71	1	33.0	72-92	21	30.9	b	-	-	-	-	72	30.5
833	50	30.3	-	-	-	71-91	21	31.0	b	-	-	-	-	71	30.5
834	50	30.3	-	-	-	71-91	21	31.0	b	-	-	-	-	71	30.5
835	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
836	50	30.3	71-74	4	31.6	75-95	21	30.8	b	-	-	-	-	75	30.5
837	50	30.3	-	-	-	71-91	21	31.0	98-114	17	30.8	8	30.7	96	30.6
838	50	30.3	71-77	5	33.0	78-98	21	30.7	104-120	17	30.8	4	30.7	97	30.6
839	50	30.3	71-74	4	31.6	75-95	21	30.8	101-117	17	30.8	5	31.1	97	30.6
840	50	30.3	71	1	33.0	72-92	21	30.9	98-114	17	30.8	8	30.7	97	30.6
841	50	30.3	71-74	4	31.6	75-95	21	30.8	101-117	17	30.8	5	31.1	97	30.6
842	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
843	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
844	50	30.3	-	-	-	71-91	21	31.0	97-113	17	30.8	9	30.6	97	30.6
845	50	30.3	71	1	33.0	72-92	21	30.9	b	-	-	-	-	72	30.5
846	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
847	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
848	50	30.3	71-73	3	31.5	74-94	21	30.9	101-117	17	30.8	5	31.1	96	30.6
849	50	30.3	71	1	33.0	72-92	21	30.9	99-115	17	30.8	7	30.8	96	30.6
850	50	30.3	71	1	33.0	72-92	21	30.9	b	-	-	-	-	72	30.5

¹¹Individual cumulative exposure concentrations taken directly from Tables 14 and 15 for the pre-mating and mating periods, respectively.

¹²Individual cumulative exposure concentrations were calculated using Table 16 for the gestation period. Using animal number 825 as an example a total of 21 exposures were received during gestation (Days 72-92, inclusive). During this period, a total of 126 exposure hours (132-6-126), and a total of 3888 concentration hours (4086.0-198-3888) were accumulated. The cumulative exposure concentration for this period was 30.9 ppm (3888/126-30.9).

¹³Individual cumulative exposure concentrations were calculated using Table 17 for the lactation period using the procedure described for the gestation period.

¹⁴Post-lactation concentrations were obtained by averaging the daily exposure concentrations that were obtained post-lactation for each animal.

¹⁵The total cumulative exposure concentration was calculated by dividing the total cumulative exposure concentration of the pre-mating, mating, gestation, lactation, and post-lactation periods by the total number of exposures.

^aAccidental death, 2/5/80.

^bAnimal did not deliver pups, no exposures received during lactation or post-lactation period.

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Appendix A (cont.)

Table 19

A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Pre-Mating Treatment Period
Group V - 300 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran L									
1/7/80	1	1	334	45	6	2004	6	2,004	334
1/8/80	2	2	273	41	6	1638	12	3,642	304
1/9/80	3	3	277	26	6	1662	18	5,304	295
1/10/80	4	4	306	52	6	1836	24	7,140	298
1/11/80	5	5	287	24	6	1722	30	8,862	295
1/14/80	8	6	292	25	6	1752	36	10,614	295
1/15/80	9	7	275	3	6	1650	42	12,264	292
1/16/80	10	8	300	22	6	1800	48	14,064	293
1/17/80	11	9	294	22	6	1764	54	15,828	293
1/18/80	12	10	293	15	6	1758	60	17,586	293
1/21/80	15	11	296	8	6	1776	66	19,362	293
1/22/80	16	12	296	14	6	1776	72	21,138	294
1/23/80	17	13	284	12	6	1704	78	22,842	293
1/24/80	18	14	285	12	6	1710	84	24,552	292
1/25/80	19	15	305	3	6	1830	90	26,382	293
1/28/80	22	16	295	7	6	1770	96	28,152	293
1/29/80	23	17	303	6	6	1818	102	29,970	294
1/30/80	24	18	303	16	6	1818	108	31,788	294
1/31/80	25	19	304	19	6	1824	114	33,612	295
2/1/80	26	20	306	5	6	1836	120	35,448	295
2/4/80	29	21	303	29	6	1818	126	37,266	296
2/5/80	30	22	302	3	6	1812	132	39,078	296
2/6/80	31	23	299	13	6	1794	138	40,872	296
2/7/80	32	24	303	4	6	1818	144	42,690	296
2/8/80	33	25	304	6	6	1824	150	44,514	297
2/11/80	36	26	299	11	6	1794	156	46,308	297
2/12/80	37	27	300	5	6	1800	162	48,108	297
2/13/80	38	28	300	12	6	1800	168	49,908	297
2/14/80	39	29	300	3	6	1800	174	51,708	297
2/15/80	40	30	301	12	6	1806	180	53,514	297
2/18/80	43	31	301	6	6	1806	186	55,320	297
2/19/80	44	32	299	5	6	1794	192	57,114	297
2/20/80	45	33	301	8	6	1806	198	58,920	298
2/21/80	46	34	298	7	6	1788	204	60,708	298
2/22/80	47	35	301	8	6	1806	210	62,514	298
2/25/80	50	36	299	4	6	1794	216	64,308	298
2/26/80	51	37	299	17	6	1794	222	66,102	298
2/27/80	52	38	302	12	6	1812	228	67,914	298
2/28/80	53	39	303	4	6	1818	234	69,732	298
2/29/80	54	40	294	11	6	1764	240	71,496	298

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Appendix A (cont.)
Table 19 (cont.)
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Pre-Mating Treatment Period
Group V - 300 ppm (cont.)

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
3/3/80	57	41	311	42	6	1866	246	73,362	298
3/4/80	58	42	301	5	6	1806	252	75,168	298
3/5/80	59	43	299	11	6	1794	258	76,962	298
3/6/80	60	44	300	14	6	1800	264	78,762	298
3/7/80	61	45	300	5	6	1800	270	80,562	298
3/10/80	64	46	303	20	6	1818	276	82,380	298
3/11/80	65	47	310	22	6	1860	282	84,240	299
3/12/80	66	48	297	25	6	1782	288	86,022	299
Miran 04									
3/13/80	67	49	291	18	6	1746	294	87,768	299
3/14/80	68	50	300	32	6	1800	300	89,568	299

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Appendix A (cont.)
Table 20
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Mating Period
Group V - 300 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	293	18	6	1758	6	1,758	293
3/18/80	72	52	302	32	6	1812	12	3,570	298
3/19/80	73	53	303	31	6	1818	18	5,388	299
3/20/80	74	54	319	51	6	1914	24	7,302	304
3/21/80	75	55 ^a	302	23	6	1812	30	9,114	304
3/24/80	78	58	306	25	6	1836	36	10,950	304
3/25/80	79	59	304	20	6	1824	42	12,774	304
3/26/80	80	60	302	15	6	1812	48	14,586	304
3/27/80	81	61	300	32	6	1800	54	16,386	303
3/28/80	82	62 ^a	294	44	6	1764	60	18,150	303
3/31/80	85	65	293	24	6	1758	66	19,908	302
4/1/80	86	66	294	21	6	1764	72	21,672	301
4/2/80	87	67	298	24	6	1788	78	23,460	301
4/3/80	88	68	287	11	6	1722	84	25,182	300
4/4/80	89	69	299	13	6	1794	90	26,976	300

^aExposure numbers 56, 57, 63, and 64 for animals receiving exposure during the gestation period.

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Appendix A (cont.)
Table 21

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A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Gestation Period
Group V - 300 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
3/17/80	71	51	293	18	6	1758	6	1,758	293
3/18/80	72	52	302	32	6	1812	12	3,570	298
3/19/80	73	53	303	31	6	1818	18	5,388	299
3/20/80	74	54	319	51	6	1914	24	7,302	304
3/21/80	75	55	302	23	6	1812	30	9,114	304
3/22/80	76	56	309	29	6	1854	36	10,968	305
3/23/80	77	57	307	64	6	1842	42	12,810	305
3/24/80	78	58	306	25	6	1836	48	14,646	305
3/25/80	79	59	304	20	6	1824	54	16,470	305
3/26/80	80	60	302	15	6	1812	60	18,282	305
3/27/80	81	61	300	32	6	1800	66	20,082	304
3/28/80	82	62	294	44	6	1764	72	21,846	303
3/29/80	83	63	296	23	6	1776	78	23,622	303
3/30/80	84	64	300	14	6	1800	84	25,422	303
3/31/80	85	65	293	24	6	1758	90	27,180	302
4/1/80	86	66	294	21	6	1764	96	28,944	302
4/2/80	87	67	298	24	6	1788	102	30,732	301
4/3/80	88	68	287	11	6	1722	108	32,454	301
4/4/80	89	69	299	13	6	1794	114	34,248	300
4/5/80	90	70	295	55	6	1770	120	36,018	300
4/6/80	91	71	289	29	6	1734	126	37,752	300
4/7/80	92	72	303	23	6	1818	132	39,570	300
4/8/80	93	73	288	40	6	1728	138	41,298	299
4/9/80	94	74	296	16	6	1776	144	43,074	299
4/10/80	95	75	285	25	6	1710	150	44,784	299
4/11/80	96	76	293	23	6	1758	156	46,542	298
4/12/80	97	77	291	18	6	1746	162	48,288	298
4/13/80	98	78	280	27	6	1680	168	49,968	297
4/14/80	99	79	268	16	6	1608	174	51,576	296
4/15/80	100	80	260	60	6	1560	180	53,136	295
4/16/80	101	81	303	39	6	1818	186	54,954	295
4/17/80	102	82	293	50	6	1758	192	56,712	295
4/18/80	103	83	303	29	6	1818	198	58,530	296
4/19/80	104	84	294	40	6	1764	204	60,294	296
4/20/80	105	85	304	15	6	1824	210	62,118	296
4/21/80	106	86	289	45	6	1734	216	63,864	296

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Appendix A (cont.)
Table 22
A Female Fertility Study in Rats with Benzene

Cumulative Exposure Record
Lactation Period
Group V - 300 ppm

Date	Test Day	Exposure Number	Mean Daily Exposure Concentration	SD	Daily Exposure Hours	Daily Concentration Hours	Total Exposure Hours	Total Concentration Hours	Cumulative Integrated Mean Concentration
Miran 04									
4/7/80	92	72	303	23	6	1818	6	1,818	303
4/8/80	93	73	288	40	6	1728	12	3,546	296
4/9/80	94	74	296	16	6	1776	18	5,322	296
4/10/80	95	75	285	25	6	1710	24	7,032	293
4/11/80	96	76	293	23	6	1758	30	8,790	293
4/12/80	97	77	291	18	6	1746	36	10,536	293
4/13/80	98	78	280	27	6	1680	42	12,216	291
4/14/80	99	79	268	16	6	1608	48	13,824	288
4/15/80	100	80	260	60	6	1560	54	15,384	285
4/16/80	101	81	303	39	6	1818	60	17,202	287
4/17/80	102	82	293	50	6	1758	66	18,960	287
4/18/80	103	83	303	29	6	1818	72	20,778	289
4/19/80	104	84	294	40	6	1764	78	22,542	289
4/20/80	105	85	304	15	6	1824	84	24,366	290
4/21/80	106	86	289	45	6	1734	90	26,100	290
4/22/80	107	87	300	23	6	1800	96	27,900	291
4/23/80	108	88	296	41	6	1776	102	29,676	291
4/24/80	109	89	283	37	6	1698	108	31,374	291
4/25/80	110	90	300	14	6	1800	114	33,174	291
4/26/80	111	91	305	18	6	1830	120	35,004	292
4/27/80	112	92	296	16	6	1776	126	36,780	292
4/28/80	113	93	337	42	6	2022	132	38,802	294
4/29/80	114	94	302	33	6	1812	138	40,614	294
4/30/80	115	95	293	24	6	1758	144	42,372	294
5/1/80	116	96	315	42	6	1890	150	44,262	295
5/2/80	117	97	289	34	6	1734	156	45,996	295
5/3/80	118	98	316	32	6	1896	162	47,892	296
5/4/80	119	99	293	11	6	1758	168	49,650	296
5/5/80	120	100	319	30	6	1914	174	51,564	296
5/6/80	121	101	292	15	6	1752	180	53,316	296
5/7/80	122	102	292	21	6	1752	186	55,068	296
5/8/80	123	103	309	20	6	1854	192	56,922	296
5/9/80	124	104	309	20	6	1854	198	58,776	297
5/10/80	125	105	315	21	6	1890	204	60,666	297
5/11/80	126	106	311	29	6	1866	210	62,532	298
5/12/80	127	107	301	39	6	1806	216	64,338	298

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Appendix A (cont.)

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Table 23

A Female Fertility Study in Rats with Benzene

Individual Exposure Record for Group V

Pre-Mating ¹⁶			Mating ¹⁶			Gestation ¹⁷			Lactation ¹⁸			Post-Lactation ¹⁹		Cumulative Total ²⁰	
An.	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Test Days of Exposure	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)	Number of Exposures	Cumulative Mean Exposure Concentration (ppm)
1025	50	299	71-84	10	303	85-105	21	291	-	-	-	8	296	88	297
1026	50	299	71	1	293	72-92	21	300	99-115	17	296	7	296	96	298
1027	50	299	71-73	3	299	74-94	21	299	101-117	17	300	5	296	96	299
1028	50	299	71-83	10	303	84-104	21	291	111-127	17	306	-	-	98	299
1029	50	299	71-72	2	298	73-93	21	299	99-115	17	296	7	296	97	298
1030	50	299	-	-	-	71-91	21	300	a	-	-	-	-	71	299
1031	50	299	71-74	4	304	75-95	21	297	103-119	17	301	5	296	97	299
1032	50	299	-	-	-	71-91	21	300	97-113	17	294	9	296	97	298
1033	50	299	71-73	3	299	74-94	21	299	100-116	17	298	6	296	97	299
1034	50	299	71	1	293	72-92	21	300	99-115	17	296	7	296	96	298
1035	50	299	71-73	3	299	74-94	21	299	100-116	17	298	6	296	97	299
1036	50	299	-	-	-	71-91	21	300	97-113	17	294	9	296	97	298
1037	50	299	-	-	-	71-91	21	300	98-114	17	295	8	296	96	298
1038	50	299	-	-	-	71-91	21	300	97-113	17	294	9	296	97	298
1039	50	299	71	1	293	72-92	21	300	99-115	17	296	8	296	97	298
1040	50	299	71-74	4	304	75-95	21	297	103-119	17	301	6	297	98	299
1041	50	299	-	-	-	71-91	21	300	a	-	-	-	-	71	299
1042	50	299	71-73	3	299	74-94	21	299	100-116	17	298	7	296	98	299
1043	50	299	71-74	4	304	75-95	21	297	101-117	17	300	6	297	98	299
1044	50	299	71-72	2	298	73-93	21	299	99-115	17	296	8	296	98	298
1045	50	299	71-75	5	304	76-96	21	297	103-119	17	301	6	297	99	299
1046	50	299	-	-	-	71-91	21	300	97-113	17	294	10	296	98	298
1047	50	299	-	-	-	71-91	21	300	a	-	-	-	-	71	299
1048	50	299	-	-	-	71-91	21	300	99-115	17	296	8	296	96	298
1049	50	299	71-76	5	304	77-97	21	296	104-120	17	302	5	297	98	299
1050	50	299	-	-	-	71-91	21	300	98-114	17	295	9	296	97	298

¹⁶Individual cumulative exposure concentrations taken directly from Tables 19 and 20 for the pre-mating and mating period, respectively.

¹⁷Individual cumulative exposure concentrations were calculated using Table 21 for the gestation period. Using animal number 1025 as an example a total of 21 exposures were received during gestation (Days 85-105, inclusive). During this period, a total of 126 exposure hours (210-84-126) and a total of 36696 concentration hours (62118-25422-36696) were accumulated. The cumulative exposure concentration for this period was 291 ppm (36696/126-291).

¹⁸Individual cumulative exposure concentrations were calculated using Table 22 for the lactation period using the procedure described for the gestation period.

¹⁹Post-lactation concentrations were obtained by averaging the daily exposure concentrations that were obtained post-lactation for each animal.

²⁰The total cumulative exposure concentration was calculated by dividing the total cumulative exposure concentration of the pre-mating, mating, gestation, lactation, and post-lactation periods by the total number of exposures.

^aAnimal did not deliver pups, no exposures received during lactation or post-lactation period.

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Appendix A (Cont.)
Table 24

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A Female Fertility Study in Rats with Benzene

Daily Nominal Concentrations

Date	Test Day	Exposure Number	Nominal Concentration (ppm)			
			Group II	Group III	Group IV	Group V
Miran L						
1/7/80	1	1	0.6	7.8	26.5	329
1/8/80	2	2	0.2	6.1	25.7	276
1/9/80	3	3	0.8	8.2	30.1	304
1/10/80	4	4	2.2	8.3	31.6	287
1/11/80	5	5	0.9	9.1	28.3	328
1/14/80	8	6	0.7	8.1	29.8	316
1/15/80	9	7	0.7	8.1	30.7	305
1/16/80	10	8	1.0	8.5	29.0	337
1/17/80	11	9	0.9	8.4	28.5	302
1/18/80	12	10	1.3	8.2	30.6	307
1/21/80	15	11	1.3	8.2	28.9	321
1/22/80	16	12	1.4	8.2	27.9	310
1/23/80	17	13	1.4	8.0	28.2	290
1/24/80	18	14	1.5	8.8	30.7	300
1/25/80	19	15	1.4	10.9	31.4	300
1/28/80	22	16	1.5	6.1	25.9	299
1/29/80	23	17	1.3	10.6	32.7	290
1/30/80	24	18	0.7	10.7	31.3	317
1/31/80	25	19	1.6	10.4	31.3	312
2/1/80	26	20	1.4	10.2	29.5	317
2/4/80	29	21	1.4	5.1	25.2	302
2/5/80	30	22	1.3	9.9	30.2	312
2/6/80	31	23	1.5	8.5	29.8	320
2/7/80	32	24	1.8	9.0	30.2	324
2/8/80	33	25	2.0	11.5	30.6	319
2/11/80	36	26	a	a	23.5	308
2/12/80	37	27	1.0	9.1	30.3	319
2/13/80	38	28	0.8	9.1	31.1	314
2/14/80	39	29	1.9	12.7	30.9	329
2/15/80	40	30	0.8	10.4	28.6	321
2/18/80	43	31	1.2	11.3	30.0	325
2/19/80	44	32	1.3	10.3	29.7	317
2/20/80	45	33	1.1	10.1	28.7	326
2/21/80	46	34	1.1	9.5	28.3	315
2/22/80	47	35	1.1	10.6	29.1	320

^aNominal concentration suspect due to possible weighing error, not included in mean calculation.

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Appendix A (Cont.)

Table 24 (cont.)

A Female Fertility Study in Rats with Benzene

Daily Nominal Concentrations (cont.)

Date	Test Day	Exposure Number	Nominal Concentration (ppm)			
			Group II	Group III	Group IV	Group V
Miran L (cont.)						
2/25/80	50	36	1.0	10.5	29.3	318
2/26/80	51	37	a	10.0	30.1	324
2/27/80	52	38	1.1	12.1	30.5	325
2/28/80	53	39	1.9	10.4	30.3	319
2/29/80	54	40	1.3	8.3	29.4	314
3/3/80	57	41	1.4	10.3	32.5	318
3/4/80	58	42	1.2	10.8	31.0	321
3/5/80	59	43	1.2	10.2	30.4	337
3/6/80	60	44	1.4	10.9	30.3	338
3/7/80	61	45	1.2	10.4	30.4	343
3/10/80	64	46	1.3	11.3	30.6	344
3/11/80	65	47	1.0	10.5	32.4	361
3/12/80	66	48	1.3	10.7	31.3	338
Miran O4						
3/13/80	67	49	1.2	11.9	35.9	352
3/14/80	68	50	1.5	11.0	32.9	362
3/17/80	71	51	1.9	6.9	32.0	321
3/18/80	72	52	0.8	9.9	34.5	375
3/19/80	73	53	0.9	10.3	34.7	355
3/20/80	74	54	1.0	11.3	32.4	343
3/21/80	75	55	1.0	10.4	34.4	363
3/22/80	76	56	1.1	10.6	36.6	348
3/23/80	77	57	0.8	9.6	36.9	367
3/24/80	78	58	1.3	10.9	37.8	367
3/25/80	79	59	1.3	10.4	34.4	375
3/26/80	80	60	1.1	10.4	33.4	357
3/27/80	81	61	0.8	10.1	32.9	378
3/28/80	82	62	1.1	10.5	32.5	355
3/29/80	83	63	1.2	10.4	34.5	398
3/30/80	84	64	1.3	11.2	34.6	419
3/31/80	85	65	1.6	9.7	35.4	394
4/1/80	86	66	1.2	11.1	36.1	381
4/2/80	87	67	1.1	10.3	34.3	390
4/3/80	88	68	1.5	10.3	35.9	406
4/4/80	89	69	1.1	10.5	34.8	421
4/5/80	90	70	1.2	9.8	35.5	347

^aNominal concentration suspect due to possible weighing error, not included in mean calculation.

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Appendix A (Cont.)

Table 24 (cont.)

A Female Fertility Study in Rats with Benzene

Daily Nominal Concentrations (cont.)

Date	Test Day	Exposure Number	Nominal Concentration (ppm)			
			Group II	Group III	Group IV	Group V
4/6/80	91	71	1.1	11.0	36.1	375
4/7/80	92	72	1.2	10.3	34.2	381
4/8/80	93	73	1.2	10.7	35.9	376
GC (Groups II and III, Miran 04 (Groups IV and V)						
4/9/80	94	74	1.3	11.6	35.2	409
4/10/80	95	75	1.5	11.0	32.8	405
4/11/80	96	76	1.1	11.5	33.7	402
4/12/80	97	77	1.2	11.1	35.9	418
4/13/80	98	78	2.2	16.1	39.7	408
4/14/80	99	79	1.1	11.1	34.8	412
4/15/80	100	80	1.8	12.1	38.1	403
4/16/80	101	81	1.2	11.6	40.4	397
4/17/80	102	82	1.0	11.2	34.8	390
4/18/80	103	83	1.3	11.4	40.1	404
4/19/80	104	84	1.2	11.7	34.3	395
4/20/80	105	85	1.3	13.0	36.9	420
4/21/80	106	86	1.4	10.9	38.3	379
4/22/80	107	87	1.2	12.6	35.2	408
4/23/80	108	88	1.8	12.6	36.5	420
4/24/80	109	89	1.3	13.4	36.0	390
4/25/80	110	90	1.3	11.3	33.4	407
4/26/80	111	91	1.3	11.1	31.6	399
4/27/80	112	92	1.7	12.1	32.3	362
4/28/80	113	93	1.1	11.0	31.6	340
4/29/80	114	94	1.3	11.0	33.1	296
4/30/80	115	95	1.2	11.5	32.4	309
5/1/80	116	96	1.2	11.5	33.8	333
5/2/80	117	97	1.3	11.3	39.6	322
5/3/80	118	98	1.2	11.1	37.4	345
5/4/80	119	99	1.3	10.3	39.6	316
5/5/80	120	100	1.2	11.7	35.3	351
5/6/80	121	101	1.2	12.2	35.1	320
5/7/80	122	102	1.0	11.1	38.5	296
5/8/80	123	103	1.2	12.7	34.0	345
5/9/80	124	104	1.2	11.2	36.1	365
5/10/80	125	105	b	10.9	b	356
5/11/80	126	106	b	11.3	b	313
5/12/80	127	107	1.4	11.7	39.9	272
5/13/80	128	108	c	11.0	c	c
5/14/80	129	109	c	11.1	c	c
Mean			1.2	10.4	32.7	346
S.D.			0.3	1.6	3.5	39
N			103	108	105	107

bNon-exposure day.

cExposures terminated.

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Appendix A (cont.)

Table 25

A Female Fertility Study in Rats with Benzene

Mean Daily Nominal Concentration vs. Mean Daily Analytical Concentrations

Group	Date		Nominal Conc. (ppm)	Analytical Conc. (ppm)	% Difference
II	1/7/80 - 4/8/80 ^a	Mean	1.2	.92	24
		S.D.	.3	.5	
		N	71	73	
	4/9/80 - 5/12/80 ^b	Mean	1.3	1.2	8
		S.D.	.2	.9	
		N	32	32	
	1/7/80 - 5/12/80	Mean	1.2	1.1	9
		S.D.	.3	.4	
		N	104	105	
III	1/7/80 - 4/8/80 ^a	Mean	9.8	9.7	1
		S.D.	1.4	1.0	
		N	72	73	
	4/9/80 - 5/14/80 ^b	Mean	11.7	12.9	9
		S.D.	1.0	1.0	
		N	36	36	
	1/7/80 - 5/14/80	Mean	10.4	11.1	6
		S.D.	1.6	1.9	
		N	108	109	
IV	1/7/80 - 5/12/80	Mean	32.7	30.6	7
		S.D.	3.5	1.3	
		N	105	105	
V	1/7/80 - 5/12/80	Mean	346	299	16
		S.D.	39	11	
		N	107	107	

^aAnalytical concentrations measured using Miran Infrared Analyzer.^bAnalytical concentrations measured using on-line Tracor gas chromatograph.DO 067748
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Appendix B
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Body Weight Data - (grams)
Pre-Mating Treatment Period

Group ppm	Animal Number	Week:	0	1	2	3	4	5	6	7	8	9	10	Change in Wt. 1-10
			A ⁻	A ⁻	A ⁻	A ⁻	A ⁻	A ⁻	A ⁻	A ⁻	A ⁻	A ⁻	A ⁻	A ⁻
I 0	225		169	188	199	210	228	236	244	245	255	258	258	70
	226		176	197	210	226	241	253	266	275	280	279	288	91
	227		157	175	183	198	207	221	232	232	250	265	245	70
	228		155	176	203	196	208	214	221	215	218	222	225	49
	229 ^a		160	(128)	187	197	209	215	225	231	238	237	247	(72)
	230		164	179	191	205	219	227	230	242	245	249	251	72
	231		158	164	188	195	209	212	226	237	245	244	257	93
	232		161	182	200	210	218	225	238	249	240	254	266	84
	233		151	161	163	182	196	200	212	217	220	221	229	68
	234		171	193	205	211	221	229	242	244	251	255	263	70
	235		174	188	203	214	228	236	249	244	257	257	263	75
	236		139	163	167	174	190	196	209	213	212	219	228	65
	237		158	180	188	195	209	221	231	231	239	240	241	61
	238		140	186	194	202	224	233	237	238	244	249	249	63
	239		150	168	177	184	201	207	216	218	226	232	237	69
	240		161	185	189	202	222	229	237	247	246	257	265	80
	241		153	165	180	194	211	218	232	242	244	248	257	92
	242		162	186	202	216	229	242	243	249	256	260	271	85
	243		158	181	200	211	222	232	239	242	249	258	264	83
	244		168	187	202	212	228	237	244	262	281	276	280	93
	245		166	181	180	204	220	226	232	235	235	241	246	65
	246		162	179	208	215	233	239	245	250	257	261	265	86
	247		147	162	169	174	193	191	206	209	205	213	215	53
	248		172	205	219	234	259	267	279	291	300	306	312	107
	249		145	159	167	181	196	201	203	208	214	216	218	59
	250		159	180	197	214	232	250	251	257	271	279	278	98
	Mean		159	179	191	202	217	225	234	239	245	250	255	76
	S.D.		10	12	15	15	16	18	17	20	22	22	22	14
	N		26	25	26	26	26	26	26	26	26	26	26	25

For explanation of statistical symbol: A⁻; see Appendix Q.

^aBody weight Week 1 appears incorrectly recorded. Weight data (in parentheses) excluded from calculations.

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Appendix B (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Body Weight Data - (grams)
Pre-Mating Treatment Period

Group ppm	Animal Number	Week:	0	1	2	3	4	5	6	7	8	9	10	Change in Wt. 1-10
II 1	425		153	172	182	199	213	225	229	233	241	244	245	73
	426		160	172	191	198	213	228	229	234	237	240	251	79
	427		159	194	192	208	219	229	240	236	248	247	248	54
	428		181	202	214	227	244	253	261	257	267	273	279	77
	429		158	176	188	198	206	213	221	226	228	233	239	63
	430		147	169	185	195	215	226	235	231	244	248	256	87
	431		190	208	223	240	256	263	271	274	284	309	293	85
	432		168	191	206	224	236	248	258	264	266	280	289	98
	433		167	187	210	227	239	250	249	262	273	278	280	93
	434		149	166	184	195	196	213	222	225	222	233	242	76
	435		155	169	174	185	206	209	212	218	224	224	221	52
	436		167	187	201	207	221	232	233	238	237	241	243	56
	437		172	190	210	222	235	236	251	252	257	263	261	71
	438		156	174	193	214	218	225	239	245	239	253	255	81
	439		157	170	172	184	196	200	207	213	219	222	226	56
	440		160	177	195	196	232	261	241	234	244	259	261	84
	441		151	171	184	195	211	219	225	226	234	241	246	75
	442		163	187	197	205	222	237	257	253	257	255	264	77
	443		164	172	190	204	216	224	231	242	241	256	249	77
	444		140	156	170	179	194	200	209	214	218	222	231	75
	445		165	192	208	215	230	243	248	248	275	273	273	81
	446		155	177	191	205	216	229	232	240	241	252	258	81
	447		166	183	201	207	226	235	245	247	253	261	264	81
	448		144	162	167	181	196	214	217	218	223	231	232	70
	449		161	187	198	208	220	230	236	247	243	260	257	70
	450		154	173	187	200	211	223	233	235	239	244	254	81
Mean			160	179	193	205	219	229	236	239	244	252	255	75
S.D.			11	12	14	15	16	17	16	16	18	20	18	11
N			26	26	26	26	26	26	26	26	26	26	26	26

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Appendix B (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Body Weight Data - (grams)
Pre-Mating Treatment Period

Group ppm	Animal Number	Week:	0	1	2	3	4	5	6	7	8	9	10	Change in Wt. 1-10
III 10	625		174	194	202	215	233	239	249	249	259	265	267	73
	626		162	180	192	210	218	231	241	241	250	259	263	83
	627		160	175	188	196	219	216	224	224	223	237	244	69
	628		159	165	185	185	209	207	224	221	220	230	238	73
	629		141	159	166	179	194	201	205	213	217	221	221	62
	630		148	170	180	192	201	206	214	219	220	224	236	66
	631		152	166	183	194	206	213	219	229	228	240	237	71
	632		153	175	186	198	211	215	229	237	235	242	249	74
	633		157	174	190	207	218	231	242	243	244	257	258	84
	634		158	184	194	210	222	238	240	250	250	264	268	84
	635		167	180	194	210	223	235	241	237	244	253	251	71
	636		173	191	209	218	238	250	257	258	263	267	269	78
	637		156	164	177	190	205	210	209	220	225	229	229	65
	638		158	176	185	194	209	212	221	218	232	236	237	61
	639		152	166	181	189	200	208	211	216	223	227	227	61
	640		165	178	190	208	215	227	235	239	242	252	255	77
	641		165	186	192	202	222	231	235	240	251	265	267	81
	642		161	183	190	213	223	228	236	243	250	254	251	68
	643		161	188	203	213	220	236	244	246	252	263	271	83
	644		153	187	209	225	235	257	259	271	274	284	281	94
	645		156	169	178	196	207	213	220	225	228	228	232	63
	646		161	177	189	197	211	223	228	230	237	249	247	70
	647		170	190	201	214	228	242	245	246	252	261	263	73
	648		176	201	215	226	245	260	267	269	279	293	295	94
	649		177	207	220	231	233	256	261	264	264	284	285	78
	650		152	175	190	204	224	237	244	244	251	268	266	91
Mean			160	179	192	204	218	228	235	238	243	252	254	75
S.D.			9	12	12	13	13	17	17	16	17	20	19	10
N			26	26	26	26	26	26	26	26	26	26	26	26

No statistically significant differences from control.

B-3

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Appendix B (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Body Weight Data - grams
Pre-Mating Treatment Period

Group ppm	Animal Number	Week: 0	1	2	3	4	5	6	7	8	9	10	Change in Wt. 1-10
IV 30	825	166	191	205	216	223	237	250	252	256	272	272	81
	826	174	191	203	215	230	242	251	248	255	268	270	79
	827	161	184	197	208	225	227	250	251	268	278	279	95
	828	142	161	173	183	198	203	213	218	221	224	232	71
	829 ^b	150	165	173	190	197	-	-	-	-	-	-	-
	830	166	183	204	207	220	231	234	240	249	254	256	73
	831	163	184	199	214	221	226	236	244	247	256	254	70
	832	170	188	210	225	236	255	261	268	273	289	290	102
	833	168	182	192	207	220	232	235	240	245	249	249	67
	834	172	193	204	224	241	253	256	265	274	288	292	99
	835	175	193	215	219	234	243	250	255	258	267	270	77
	836	157	178	198	214	226	237	241	248	253	258	259	81
	837	153	171	194	215	228	237	253	266	268	278	282	111
	838	178	197	211	223	241	249	254	264	275	285	286	89
	839	165	178	188	199	212	218	224	233	241	240	247	69
	840	134	146	160	175	186	192	194	200	199	203	206	60
	841	156	168	187	195	203	217	227	226	235	236	245	77
	842	152	174	184	191	202	212	214	223	227	233	232	58
	843	166	186	197	204	219	221	231	237	244	248	253	67
	844	155	172	193	202	218	230	241	242	246	252	260	88
	845	159	176	195	210	216	232	236	247	256	254	266	90
	846	161	171	200	207	222	233	233	247	249	262	265	94
	847	147	162	176	186	199	201	207	217	223	224	233	71
	848	151	164	179	193	202	205	211	220	228	230	228	64
	849	158	184	200	208	225	236	241	242	241	252	257	73
	850	157	171	188	197	206	218	217	229	229	235	240	69
Mean		160	177	193	205	217	227	234	241	246	253	257	79
S.D.		10	12	13	13	14	16	17	17	19	22	21	14
N		26	26	26	26	26	25	25	25	25	25	25	25

No statistically significant differences from control.

^bAnimal was killed accidentally (i.e., dropped during handling) during week 5 of the pre-mating treatment period.

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Appendix B (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Body Weight Data - (grams)
Pre-Mating Treatment Period

Group ppm	Animal Number	Week:	0	1	2	3	4	5	6	7	8	9	10	Change in Wt. 1-10
V 300	1025		165	187	206	221	233	242	254	256	256	271	270	83
	1026		148	165	178	187	201	213	220	222	227	229	238	73
	1027		158	169	183	193	211	218	223	224	232	237	234	65
	1028		148	166	169	172	181	184	186	188	189	190	193	27
	1029		157	176	186	191	204	215	215	217	227	229	227	51
	1030		164	185	196	196	202	209	221	229	242	253	258	73
	1031		156	174	183	195	210	222	226	222	232	236	240	66
	1032		189	217	237	257	273	280	293	303	309	305	313	96
	1033		140	152	167	176	190	203	212	213	223	226	229	77
	1034		169	195	212	224	239	245	260	263	268	274	281	86
	1035		171	197	205	217	238	257	243	249	260	270	267	70
	1036		156	179	187	200	216	220	238	242	246	247	257	78
	1037		139	165	180	187	201	206	214	215	218	230	227	62
	1038		149	169	178	189	206	212	216	221	231	232	237	68
	1039		162	182	197	211	221	231	238	246	250	251	252	70
	1040		166	178	194	215	223	231	233	239	246	250	249	71
	1041		165	188	202	217	234	236	247	251	260	265	265	77
	1042		181	209	215	228	244	250	251	261	270	278	274	65
	1043		155	168	183	191	198	207	209	213	226	231	229	61
	1044		156	180	190	199	216	228	236	233	247	257	255	75
	1045		161	178	197	213	225	238	244	246	240	257	255	77
	1046		170	191	211	228	246	245	264	274	282	283	291	100
	1047		153	167	182	194	206	215	226	230	235	242	244	77
	1048		169	181	201	214	223	233	246	250	253	264	265	84
	1049		174	193	207	213	237	248	256	255	268	280	274	81
	1050		157	175	187	196	211	212	220	226	235	232	241	66
Mean			161	180	194	205	219	227	234	238	245	251	253	72
S.D.			12	14	16	19	20	21	22	24	24	24	24	14
N			26	26	26	26	26	26	26	26	26	26	26	26

No statistically significant differences from control.

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Appendix C
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights - Gestation and Lactation

Preface

^aThis female initiated delivery. The hindlimbs of the pups were noted in the vaginal canal. At later evaluation, pup was not observed. No other pups were delivered.

^bNot pregnant; values in parentheses excluded from calculations.

^cMating not confirmed; sacrificed at completion of the mating period.

^dMating confirmed; no evidence of parturition. Implantation scars observed at sacrifice; data in parentheses excluded from calculations.

^eAnimal was killed accidentally (i.e., dropped during handling) during Week 5 of the pre-mating treatment period.

^fNo pups remaining on Day 1 of lactation.

^gBody weight taken after 6 hours of no food or water.

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Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Gestation - grams
Group I - (0 ppm)

An. No.	Day:	0	7	14	21	Change in Body Weight 0-21
		A ⁻	A ⁻	A ⁻	A ⁻	A ⁻
225		262	274	308	354	92
226		286	300	327	418	132
227		248	267	305	394	146
228		225	232	259	335	110
229		249	266	293	380	131
230		252	276	303	393	141
231		257	284	315	392	135
232 ^a		262	292	302	315	53
233		229	252	276	369	140
234 ^b		(266)	(277)	(293)	(287)	(21)
235		270	284	306	385	115
236		232	243	268	325	93
237		232	257	291	362	130
238		262	277	306	389	127
239		236	257	283	356	120
240		256	284	322	403	147
241 ^c		-	-	-	-	-
242		272	287	316	412	140
243		275	297	320	403	128
244		281	297	323	417	136
245 ^b		(244)	(264)	(278)	(269)	(25)
246		259	282	306	356	97
247		216	238	260	334	118
248 ^d		(322)	(336)	(360)	(351)	(29)
249		227	241	267	342	115
250		278	311	347	423	145
Mean		253	273	300	375	122
S.D.		20	22	23	32	23
N		22	22	22	22	22

For explanation of statistical symbol: A⁻; see Appendix Q.

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Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Gestation - grams
Group II - (1 ppm)

An. No.	Day:	0	7	14	21	Change in Body Weight 0-21
425		252	266	307	397	145
426		255	268	295	372	117
427 ^b		(252)	(258)	(263)	(254)	(2)
428		281	303	335	414	133
429		237	253	281	370	133
430 ^d		(263)	(286)	(302)	(285)	(22)
431		293	314	341	418	125
432		285	303	329	406	121
433		290	302	325	400	110
434		235	267	291	376	141
435		233	241	272	334	101
436		242	253	287	352	110
437 ^c		-	-	-	-	-
438		259	264	304	382	123
439		220	227	266	331	111
440		267	292	331	422	155
441		248	271	295	380	132
442		262	282	298	370	108
443		257	284	313	388	131
444		226	254	286	344	118
445		268	303	325	416	148
446 ^c		-	-	-	-	-
447		265	285	314	387	122
448		231	231	232	316	85
449		250	261	292	316	66
450		256	282	308	390	134
Mean		255	273	301	376	121
S.D.		21	24	26	32	20
N		22	22	22	22	22

No statistically significant differences from control.

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Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Gestation - grams
Group III - (10 ppm)

An. No.	Day:	0	7	14	21	Change in Body Weight 0-21
625		270	289	320	352	82
626		262	294	322	406	144
627		243	262	289	356	113
628		247	265	290	376	129
629 ^b		(230)	(236)	(235)	(231)	(1)
630		232	256	272	348	116
631		257	264	283	330	73
632		245	268	295	383	138
633		268	285	315	388	120
634		281	315	343	431	150
635		256	259	299	389	133
636		272	291	320	362	90
637		232	266	296	370	138
638 ^b		(256)	(264)	(258)	(257)	(1)
639		232	261	279	358	126
640		252	271	306	399	147
641		275	295	333	393	118
642		260	287	309	395	135
643		272	276	317	417	145
644		286	310	341	423	137
645		239	254	285	368	129
646		256	278	308	382	126
647		265	287	309	381	116
648		304	315	347	430	126
649		286	321	358	451	165
650		275	300	326	413	138
Mean		261	282	311	388	126
S.D.		19	20	23	30	21
N		24	24	24	24	24

No statistically significant differences from control.

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Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Gestation - grams
Group IV - (30 ppm)

An. No.	Day:	0	7	14	21	Change in Body Weight 0-21
825		268	294	315	404	136
826		260	279	313	409	149
827		272	298	326	404	132
828		232	255	278	348	116
829 ^e		-	-	-	-	-
830		251	263	281	359	108
831		274	279	304	403	129
832 ^d		(286)	(275)	(326)	(361)	(75)
833 ^b		(243)	(265)	(267)	(267)	(24)
834 ^b		(288)	(301)	(303)	(301)	(13)
835		270	294	315	407	137
836 ^d		(257)	(275)	(299)	(287)	(30)
837		283	304	331	383	100
838		287	298	341	445	158
839		251	270	299	397	146
840		203	212	237	320	117
841		246	270	299	390	144
842		228	244	280	376	148
843		251	276	295	350	99
844		258	276	305	393	135
845 ^b		(260)	(272)	(282)	(269)	(9)
846		261	288	323	416	155
847		227	252	277	362	135
848		236	252	279	362	126
849		263	286	314	369	106
850 ^b		(229)	(245)	(252)	(255)	(26)
Mean		254	273	301	384	130
S.D.		21	23	25	30	18
N		19	19	19	19	19

No statistically significant differences from control.

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YZ0014413

Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Gestation - grams
Group V - (300 ppm)

An. No.	Day:	0	7	14	21	Change in Body Weight 0-21
1025		288	301	321	374	86
1026		238	257	291	379	141
1027		230	254	284	365	135
1028		200	216	246	312	112
1029		227	243	270	342	115
1030 ^b		(246)	(267)	(276)	(258)	(12)
1031		231	264	293	353	122
1032		321	337	365	458	137
1033		231	253	277	352	121
1034		268	280	316	391	123
1035		275	294	337	438	163
1036		238	269	300	390	152
1037		238	256	276	364	126
1038		230	246	268	371	141
1039		253	262	289	367	114
1040		246	271	307	394	148
1041 ^b		(272)	(279)	(280)	(271)	(1)
1042		285	304	333	403	118
1043		230	247	266	316	86
1044		263	285	315	394	131
1045		270	274	307	373	103
1046		296	324	353	454	158
1047 ^b		(247)	(261)	(261)	(260)	(13)
1048		256	267	300	343	87
1049		280	303	330	434	154
1050		244	261	288	371	127
Mean		254	273	301	377	126
S.D.		28	28	29	39	22
N		23	23	23	23	23

No statistically significant differences from control.

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YZ0014414

Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Lactation - grams
Group 1 - (0 ppm)

An. No.	Day:	0	4	14	21	Change in Body Weight 0-21
		A ⁻	A ⁻	A ⁻	A ⁻	A ⁻
225		293	292	342	343	50
226		318	310	302 ^g	354	36
227		278	290	306	308	30
228		251	263	283	289	38
229		282	289	283 ^g	320	38
230		286	301	320	321	35
231		298	295	315	316	18
232 ^a		-	-	-	-	-
233		257	285	307	320	63
234 ^b		-	-	-	-	-
235		291	321	336	330	39
236		258	251	275	303	45
237		285	286	312	306	21
238		289	291	329	347	58
239		253	280	296	300	47
240		298	315	346	346	48
241 ^c		-	-	-	-	-
242		312	297	301 ^g	330	18
243		284	296	343	340	56
244		305	282	326	346	41
245 ^b		-	-	-	-	-
246		304	293	311	320	16
247		250	248	273	296	46
248 ^d		-	-	-	-	-
249		232	249	283	276	44
250		331	336	350	361	30
Mean		284	289	311	322	39
S.D.		25	23	24	23	13
N		21	21	21	21	21

For explanation of statistical symbol: A⁻; see Appendix Q.

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YZ0014415

Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Lactation - grams
Group II - (1 ppm)

An. No.	Day:	0	4	14	21	Change in Body Weight 0-21
425		275	296	327	323	48
426		279	282	292	310	31
427 ^b		-	-	-	-	-
428		313	318	330	328	15
429		269	295	316	298	29
430 ^d		-	-	-	-	-
431		333	329	350	374	41
432		325	317	345	345	20
433		303	296	334	343	40
434		286	267	310	311	25
435		242	264	298	300	58
436		257	278	305	323	66
437 ^c		-	-	-	-	-
438		286	310	327	318	32
439		255	260	287	295	40
440		300	305	341	325	25
441		262	283	310	311	49
442		265	277	326	321	56
443		296	300	333	344	48
444		267	283	308	296	29
445		292	324	357	356	64
446 ^c		-	-	-	-	-
447		295	297	338	334	39
448		243	244	256	283	40
449		285	280	304	298	13
450		279	300	322	311	32
Mean		282	291	319	320	38
S.D.		24	22	23	22	15
N		22	22	22	22	22

No statistically significant differences from control.

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Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Lactation - grams
Group III - (10 ppm)

An. No.	Day:	0	4	14	21	Change in Body Weight 0-21
625		294	292	342	334	40
626		286	314	325	327	41
627		281	280	316	316	35
628		275	262	296	273	-2
629 ^b		-	-	-	-	-
630		257	256	282	286	29
631		274	272	277	272	-2
632		261	286	323	319	58
633		302	306	334	321	19
634		324	347	343	355	31
635		262	299	323	314	52
636		298	306	332	324	26
637		252	282	337	333	81
638 ^b		-	-	-	-	-
639		254	254	291	309	55
640		291	282	310	329	38
641		296	305	327	334	38
642		272	290	349	323	51
643		293	304	329	348	55
644		325	336	343	355	30
645		273	285	302	313	40
646		282	307	322	324	42
647		284	287	318	330	46
648		341	342	365	354	13
649		314	337	367	364	50
650		325	320	341	345	20
Mean		288	298	325	325	37
S.D.		24	26	23	24	19
N		24	24	24	24	24

No statistically significant differences from control.

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YZ0014417

Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Lactation - grams
Group IV- (30 ppm)

An. No.	Day:	0	4	14	21	Change in Body Weight 0-21
825		299	306	332	351	52
826		292	313	348	328	36
827		306	324	332	332	26
828		269	265	282	308	39
829 ^e		-	-	-	-	-
830		277	285	302	302	25
831		299	314	332	340	41
832 ^d		-	-	-	-	-
833 ^b		-	-	-	-	-
834 ^b		-	-	-	-	-
835		293	315	336	356	63
836 ^d		-	-	-	-	-
837		320	313	333	359	39
838		330	334	371	368	38
839		297	295	330	348	51
840		245	238	260	268	23
841		299	291	321	327	28
842		263	273	311	316	53
843		284	284	320	329	45
844		303	308	280 ^g	335	32
845 ^b		-	-	-	-	-
846		302	296	333	344	42
847		255	260	296	309	54
848		250	261	299	289	39
849		305	311	318	325	20
850 ^b		-	-	-	-	-
Mean		289	294	318	328	39
S.D.		23	25	26	25	12
N		19	19	19	19	19

No statistically significant differences from control.

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YZ0014418

Appendix C (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Individual and Mean Maternal Body Weights and Weight Gains
During Lactation - grams
Group V - (300 ppm)

An. No.	Day:	0	4	14	21	Change in Body Weight 0-21
1025 ^f		292	-	-	-	-
1026		262	282	316	312	50
1027		274	290	306	306	32
1028		220	234	245	266	46
1029		261	271	295	285	24
1030 ^b		-	-	-	-	-
1031		273	281	298	290	17
1032		363	362	348 ^g	386	23
1033		276	277	303	308	32
1034		314	303	340	362	48
1035		346	348	350	359	13
1036		289	294	296 ^g	336	47
1037		262	280	315	328	66
1038		276	272	270 ^g	302	26
1039		277	297	323	349	72
1040		261	295	329	337	76
1041 ^b		-	-	-	-	-
1042		331	311	350	381	50
1043		256	254	291	301	45
1044		295	297	336	347	52
1045		309	289	326	339	30
1046		342	353	347 ^g	389	47
1047 ^b		-	-	-	-	-
1048		287	314	310	306	19
1049		313	335	358	370	57
1050		274	282	310	311	37
Mean		289	296	316	330	41
S.D.		34	31	28	35	18
N		23	22	22	22	22

No statistically significant differences from control.

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YZ0014419

Appendix D
An Inhalation Female Fertility Study
with Benzene in Rats

Litter Information
Preface

Footnotes:

^aMales drawn from proven fertile in-house breeder colony.

^bDam had not finished delivery at time of afternoon evaluation but at this time 13 viable pups were noted; on the next day only 12 pups were present. The one missing pup is presented in brackets in the No. Dead column (Day 0) and included in calculation of mean number of dead pups.

^cFour dead pups were removed from the litter prior to the completion of parturition. At that same time four live pups were noted. On the next day (Day 0 of Lactation), only two viable pups were noted. The two missing pups are identified in brackets in the No. Dead column and these pups are included in calculation of mean number of dead pups.

^dAnimal was killed accidentally (i.e., dropped during handling) during Week 5 of the pre-mating treatment period.

^eFemale considered pregnant for purposes of calculating pregnancy rates (Table 2).

^fNo evidence of mating; however, implantation sites were noted at post-mating sacrifice; female considered mated and pregnant for purpose of calculating pregnancy rates (Table 2).

^gOn Day 2 of lactation, litter found to contain one additional pup; data for this litter were excluded from calculation of Day 0-4 pup survival index (Table 5).

^hOn gestation Day 24, this female initiated delivery. The hindlimbs of one pup were noted protruding from the vaginal canal. At later evaluation, pup was not observed; apparently the female had cannibalized this pup. No other pups were delivered.

ⁱNumbers in brackets designate pups recovered from litter prior to actual Day 0 of lactation.

^jFemale initiated delivery late afternoon - 15 pups were noted; however, female did not appear to have completed delivery. During the Day 0 litter check the next morning only 13 live pups were noted; the two missing pups are designated in brackets in the No. Dead column and included in calculations for number dead pups.

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Appendix D (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Litter Information - Group I (0 ppm)

Dam No.	Sire No. ^a	Gest. Length Days	Day 0							Day 4				Day 14				Day 21					
			Total Pups	No. Alive			No. Dead	Mean Pup Wt. g	Pre-Cull			Mean Pup Wt. g	Post-Cull			Mean Pup Wt. g	No. Alive		Mean Pup Wt. g				
				M	F	Total			M	F	Total		M	F	Total		M	F		Total	M	F	Total
225	4	22	6	2	4	6	0	6.8	2	4	6	8.7	2	4	6	8.7	6	21.6	2	4	6	38.3	
226	4	21	15	8	7	15	0	5.5	8	7	15	8.0	5	5	10	8.1	10	22.4	5	5	10	35.2	
227	5	22	13	5	8	13	0	6.0	5	8	13	9.8	5	5	10	9.8	10	21.4	5	5	10	38.3	
228	5	22	10	4	6	10	0	6.1	4	6	10	9.7	4	6	10	9.7	10	22.2	4	6	10	36.4	
229	6	21	14	6	8	14	0	5.7	6	8	14	8.3	5	5	10	8.3	10	21.8	5	5	10	31.7	
230	6	22	11	6	4	10	1	6.9	6	4	10	11.4	6	4	10	11.4	10	25.1	6	4	10	39.1	
231	7	22	11	6	5	11	0	6.9	6	5	11	9.9	5	5	10	9.8	10	23.3	5	5	10	38.5	
232 ^{a, h7}		Mating confirmed; evidence of parturition; one implantation scar noted at term sacrifice.																					
233	8	22	14	6	8	14	0	5.9	6	8	14	9.1	5	5	10	9.3	10	22.6	5	5	10	38.7	
234	8	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																					
235	9	22	11	7	4	11	0	6.6	7	4	11	10.8	6	4	10	10.8	10	26.4	6	4	10	44.0	
236	9	21	10	5	5	10	0	5.8	5	5	10	8.8	5	5	10	8.8	8	19.9	4	4	8	33.7	
237	10	22	10	5	4	9	1	7.1	5	4	9	10.4	5	4	9	10.4	9	24.1	5	4	9	40.3	
238	10	21	13	9	4	13	0	6.0	9	4	13	9.0	6	4	10	8.9	10	21.7	6	4	10	33.0	
239	11	22	12	7	5	12	0	6.0	7	4	11	10.8	6	4	10	10.8	10	23.8	6	4	10	42.0	
240	11	22	12	7	5	12	0	6.5	7	5	12	10.4	5	5	10	10.3	10	24.3	5	5	10	35.9	
241		Mating not confirmed; female sacrificed post-mating- no implant scars not pregnant.																					
242	12	21	13	7	6	13	0	6.2	7	6	13	9.4	5	5	10	9.4	10	23.9	5	5	10	36.1	
243	5	21	17	7	10	17	0	5.3	6	10	16	7.7	5	5	10	7.8	10	22.6	5	5	10	36.1	
244	13	22	13	6	6	12	1	5.9	4	3	7	6.5	4	3	7	6.5	7	11.4	4	3	7	21.5	
245	15	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																					
246	15	22	5	4	1	5	0	7.1	4	1	5	12.4	4	1	5	12.4	5	27.2	4	1	5	45.5	
247	16	21	11	4	7	11	0	5.7	4	7	11	8.6	4	6	10	8.5	10	21.6	4	6	10	32.3	
248 ^c	16	Mating confirmed; no evidence of parturition; however, 17 implantation scars noted at term sacrifice.																					
249	17	22	13	7	6	13	0	5.9	7	6	13	8.2	5	5	10	8.2	10	21.5	5	5	10	34.7	
250	17	22	12	5	7	12	0	6.6	5	7	12	11.0	5	5	10	11.1	10	26.5	5	5	10	44.5	
Total			455	246	123	120	243	3	130.5	120	116	236	198.9	102	95	197	199.0	195	475.3	101	94	195	775.8
Mean			21.7	11.7	5.9	5.7	11.6	0.1	6.2	5.7	5.5	11.2	9.5	4.9	4.5	9.4	9.5	9.3	22.6	4.8	4.5	9.3	36.9
S.D.			0.5	2.7	1.6	2.0	2.7	0.4	0.5	1.6	2.1	2.8	1.4	0.9	1.1	1.5	1.4	1.5	3.2	0.9	1.1	1.5	5.3
S.E.			0.1	0.6	0.3	0.4	0.6	0.1	0.1	0.4	0.5	0.6	0.3	0.2	0.2	0.3	0.3	0.3	0.7	0.2	0.2	0.3	1.1
			21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21

For explanation of statistical symbols: A-, K-; see Appendix Q.
Key: M = male; F = female.

D-2

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Appendix D (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Litter Information - Group II (1 ppm)

Dam No.	Sire No. ^a	Gest. Length Days	Day 0						Day 4				Day 14				Day 21					
			Total Pups	No. Alive			No. Dead ^f	Mean Pup Wt. g	Pre-Cull			Mean Pup Wt. g	Post-Cull			No. Alive	Mean Pup Wt. g	No. Alive			Mean Pup Wt. g	
				M	F	Total			M	F	Total		M	F	Total			M	F	Total		
425	18	22	14	8	6	14	0	6.3	8	6	14	9.0	5	5	10	9.0	10	23.5	5	5	10	35.1
426	18	22	13	3	9	12	1	6.2	3	8	11	10.4	3	7	10	10.4	10	24.1	3	7	10	39.3
427	19	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
428	19	22	13	5	8	13	0	6.4	5	8	13	10.4	5	5	10	10.5	10	22.9	5	5	10	43.2
429	21	22	14	6	8	14	0	6.0	6	8	14	9.1	5	5	10	9.1	10	23.5	5	5	10	40.7
430 ^e	21	Mating confirmed; no evidence of parturition; two implant scars noted at term sacrifice.																				
431	22	21	14	6	8	14	0	5.6	6	8	14	8.4	5	5	10	8.4	10	21.8	5	5	10	33.3
432	22	21	12	5	7	12	0	5.6	5	7	12	8.3	5	5	10	8.4	10	20.5	5	5	10	30.9
433	23	22	13	8	5	13	0	6.5	8	5	13	8.6	5	5	10	8.8	10	20.2	5	5	10	33.9
434	23	21	13	8	4	12	1	6.1	8	4	12	8.8	6	4	10	8.8	10	22.2	6	4	10	35.3
435	24	22	11	3	8	11	0	6.0	3	8	11	8.8	3	7	10	8.8	10	20.9	3	7	10	32.7
436	24	22	10	4	5	9	1	6.1	4	5	9	11.4	4	5	9	11.4	9	25.4	4	5	9	40.5
437 ^f	25	Mating not confirmed; females sacrificed post-mating- 13 implantation sites observed.																				
438	25	22	13	10	3	13	0	5.9	10	3	13	10.0	7	3	10	9.9	10	26.1	7	3	10	45.1
439	27	21	10	5	5	10	0	5.8	5	4	9	10.0	5	4	9	10.0	9	20.4	5	4	9	32.2
440	27	22	16	9	7	16	0	5.9	8	7	15	9.1	5	5	10	9.1	10	21.0	5	5	10	35.5
441	29	22	14	8	6	14	0	6.5	8	6	14	7.6	5	5	10	7.2	10	19.4	5	5	10	33.0
442	29	22	12	9	3	12	0	6.8	9	3	12	9.5	7	3	10	9.4	10	24.8	7	3	10	37.8
443	30	22	10	4	6	10	0	6.8	4	6	10	11.1	4	6	10	11.1	10	19.9	4	6	10	26.2
444	30	22	7	6	1	7	0	6.6	6	1	7	11.9	6	1	7	11.9	7	25.9	6	1	7	45.3
445	31	22	13	5	8	13	0	6.6	5	8	13	10.5	5	5	10	10.6	10	25.4	5	5	10	41.7
446 ^f	32	Mating not confirmed; females sacrificed post-mating- 15 implantation sites observed.																				
447	32	22	11	7	4	11	0	6.6	7	4	11	10.1	6	4	10	10.1	10	24.0	6	4	10	40.8
448	32	21	10	7	2	9	1	5.2	7	2	9	9.6	7	2	9	9.6	9	20.7	7	2	9	30.2
449	33	23	2	2	0	2	0	7.3	2	0	2	12.4	2	0	2	12.4	2	16.3	2	0	2	16.3
450 ^d	33	22	15	9	4	13	[2]	6.6	9	4	1	11.0	6	4	10	11.0	10	29.1	6	4	10	49.1
Total		480	260	137	117	254	6	137.4	136	115	251	216.0	111	95	206	215.9	206	498.0	111	95	206	798.1
Mean		21.8	11.8	6.2	5.3	11.5	0.3	6.2	6.2	5.2	11.4	9.8	5.0	4.3	9.4	9.8	22.6	5.0	4.3	9.4	36.3	
S.D.		0.5	3.0	2.2	2.5	3.0	0.5	0.5	2.2	2.4	2.9	1.2	1.3	1.7	1.8	1.3	1.8	2.9	1.3	1.7	1.8	7.2
S.E.		0.1	0.6	0.5	0.5	0.6	0.6	0.1	0.5	0.5	0.6	0.3	0.3	0.4	0.4	0.3	0.4	0.6	0.3	0.4	0.4	1.5
n		22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22

No statistically significant differences from the control group.
Key: M = male; F = female.

D-3

DO 067767
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YZ0014422

Appendix D (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Litter Information - Group III (10 ppm)

Dam No.	Sire No. ^a	Gest. Length Days	Day 0						Day 4				Day 14				Day 21					
			Total Pups	No. Alive			No. Dead	Mean Pup Wt. g	Pre-Cull			Mean Pup Wt. g	Post-Cull			No. Alive	Mean Pup Wt. g	Day 21				
				M	F	Total			M	F	Total		M	F	Total			M	F	Total		
625	34	22	11	4	6	10	1	6.6	4	6	10	10.3	4	6	10	10.3	10	14.2	2	2	4	15.2
626	44	22	13	8	5	13	0	6.4	8	5	13	11.0	5	5	10	10.8	10	24.5	5	5	10	40.5
627	35	21	11	7	4	11	0	5.5	7	4	11	8.1	6	4	10	8.0	10	18.3	6	4	10	27.6
628	35	22	14	9	5	14	0	5.5	8	5	13	8.8	5	5	10	8.7	10	18.8	5	5	10	28.0
629	36	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
630	36	22	13	7	6	13	0	6.1	7	6	13	8.3	5	5	10	8.3	5	12.3	3	2	5	24.7
631	37	22	5	3	2	5	0	7.1	3	2	5	13.0	3	2	5	13.0	5	30.6	3	2	5	50.8
632	37	22	15	6	9	15	0	6.3	6	9	15	9.0	5	5	10	9.0	10	22.5	5	5	10	37.1
633	39	22	10	4	6	10	0	6.5	4	6	10	11.5	4	6	10	11.5	10	25.1	4	6	10	41.1
634	35	22	13	7	6	13	0	5.8	7	6	13	10.4	5	5	10	10.3	10	25.9	5	5	10	40.5
635	40	22	14	7	7	14	0	6.5	7	7	14	9.7	5	5	10	9.7	10	25.1	5	5	10	42.9
636	40	23	5	3	2	5	0	7.8	3	2	5	15.8	3	2	5	15.8	5	32.4	3	2	5	54.7
637	41	22	15	9	5	14	1	6.1	8	5	13	9.1	5	5	10	9.0	10	24.0	5	5	10	38.6
638	44	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
639	44	22	13	6	7	13	0	6.6	6	6	12	10.5	5	5	10	10.4	10	24.3	5	5	10	41.5
640	44	22	13	5	8	13	0	6.4	5	8	13	8.7	5	5	10	8.9	10	22.9	5	5	10	38.6
641	45	22	13	8	4	12	1	6.4	8	4	12	9.2	6	4	10	9.2	10	20.1	6	4	10	29.7
642	45	23	14	3	6	9	5	7.0	3	6	9	12.0	3	6	9	12.0	9	24.5	3	6	9	43.3
643	46	22	15	6	9	15	0	6.4	6	9	15	9.6	5	5	10	9.7	10	24.0	5	5	10	40.2
644	46	21	16	7	9	16	0	5.3	7	9	16	7.7	5	5	10	7.8	9	23.0	5	4	9	33.8
645	47	22	13	4	8	12	[1] ^b	6.1	4	8	12	9.0	4	6	10	9.1	10	22.6	4	6	10	36.4
646	47	21	15	8	7	15	0	5.3	8	7	15	8.3	5	5	10	8.4	10	23.6	5	5	10	36.4
647	48	22	11	5	6	11	0	7.0	5	6	11	10.1	5	5	10	10.2	10	21.2	5	5	10	36.5
648	48	22	11	3	8	11	0	7.0	3	8	11	12.0	3	7	10	12.0	9	29.1	3	6	9	47.6
649	50	22	16	12	4	16	0	6.4	12	4	16	9.7	6	4	10	9.8	10	24.1	6	4	10	39.5
650	50	21	13	7	6	13	0	5.8	7	6	13	9.4	5	5	10	9.5	10	24.3	5	5	10	38.5
Total		526	302	148	145	293	9	151.9	146	144	290	241.2	112	117	229	241.4	222	557.4	108	108	216	903.7
Mean		21.9	12.6	6.2	6.0	12.2	0.4	6.3	6.1	6.0	12.1	10.1	4.7	4.9	9.5	10.1	9.3	23.2	4.5	4.5	9.0	37.7
S.D.		0.5	2.8	2.3	2.0	2.9	1.0	0.6	2.2	2.0	2.9	1.8	0.9	1.1	1.4	1.8	1.7	4.4	1.1	1.3	2.0	8.4
S.E.		0.1	0.6	0.5	0.4	0.6	0.2	0.1	0.5	0.4	0.6	0.4	0.2	0.2	0.3	0.4	0.3	0.9	0.2	0.3	0.4	1.7
N		24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24

No statistically significant differences from the control group.
Key: M = male; F = female.

D-4

YZ0014423

DO 067768
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Appendix D (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Litter Information - Group IV (30 ppm)

Dam No.	Sire No. ^a	Gest. Length Days	Day 0						Pre-Cull				Post-Cull				Day 14		Day 21			Mean Pup Wt. g
			Total Pups	No. Alive			No. Dead	Mean Pup Wt. g	No. Alive			Mean Pup Wt. g	No. Alive			Mean Pup Wt. g	No. Alive	Mean Pup Wt. g	No. Alive			
				M	F	Total			M	F	Total		M	F	Total				M	F	Total	
825	51	22	13	4	9	13	0	6.9	4	9	13	9.1	4	6	10	9.1	10	21.0	4	6	10	34.0
826	51	22	13	3	10	13	0	6.2	3	10	13	9.8	3	7	10	10.0	10	24.4	3	7	10	37.7
827	52	22	14	8	6	14	0	6.2	8	6	14	10.5	5	5	10	10.6	10	25.2	5	5	10	38.2
828	52	22	10	3	7	10	0	6.6	3	7	10	10.2	3	7	10	10.2	10	19.6	3	7	10	32.1
829 ^d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
830	53	22	9	3	6	9	0	6.1	3	6	9	11.3	3	6	9	11.3	9	26.5	3	6	9	40.3
831	54	22	11	7	4	11	0	6.2	7	4	11	9.5	6	4	10	9.5	10	19.3	6	4	10	30.3
832 ^e	54	Mating confirmed; no evidence of parturition; however, 23 implantation scars noted at term sacrifice.																				
833	55	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
834	55	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
835	56	22	15	8	7	15	0	5.9	8	7	15	8.5	5	5	10	8.4	10	21.3	5	5	10	32.5
836	56	Mating confirmed; no evidence of parturition; however, 14 implantation scars noted at term sacrifice.																				
837 ^f	57	22	5	2	3	5	0	6.9	2	4	6	11.7	2	4	6	11.7	6	26.5	2	4	6	41.3
838	57	21	15	7	8	15	0	5.9	7	8	15	9.1	5	5	10	9.4	10	24.2	5	5	10	38.0
839	58	21	14	6	8	14	0	5.5	6	8	14	8.7	5	5	10	8.6	10	20.7	5	5	10	31.0
840	58	21	11	6	5	11	0	5.7	6	5	11	8.9	5	5	10	8.8	10	18.4	5	5	10	26.9
841	59	21	13	8	5	13	0	5.4	8	5	13	8.1	5	5	10	8.1	10	20.2	5	5	10	30.3
842	59	22	15	4	11	15	0	5.7	3	11	14	8.3	3	7	10	8.4	10	20.0	3	7	10	30.6
843	60	22	6	3	3	6	0	7.1	3	3	6	13.1	3	3	6	13.1	6	27.7	3	3	6	43.9
844	60	21	13	3	10	13	0	5.5	3	10	13	8.4	3	7	10	8.4	10	20.6	3	7	10	29.8
845	61	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
846	61	22	15	8	5	13	2	5.7	8	5	13	7.8	5	5	10	7.9	9	18.7	4	5	9	30.5
847	62	22	13	5	8	13	0	6.6	5	8	13	9.5	5	5	10	9.5	10	18.8	5	5	10	31.1
848	62	22	13	9	4	13	0	6.1	9	4	13	9.3	6	4	10	9.3	10	20.0	6	4	10	31.6
849	63	22	7	4	3	7	0	7.8	4	3	7	13.8	4	3	7	13.8	7	29.3	4	3	7	44.9
850	63	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
Total		413	225	101	122	223	2	118.0	100	123	223	185.6	80	98	178	186.1	177	422.4	79	98	177	655.0
Mean		21.7	11.8	5.3	6.4	11.7	0.1	6.2	5.3	6.5	11.7	9.8	4.2	5.2	9.4	9.8	9.3	22.2	4.2	5.2	9.3	34.5
S.D.		0.5	3.1	2.3	2.5	3.0	0.5	0.6	2.3	2.5	2.9	1.7	1.2	1.3	1.4	1.7	1.4	3.4	1.2	1.3	1.4	5.3
S.E.		0.1	0.7	0.5	0.6	0.7	0.1	0.2	0.5	0.6	0.7	0.4	0.3	0.3	0.3	0.4	0.3	0.8	0.3	0.3	0.3	1.2
N		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19

No statistically significant differences from the control group.
Key: M = male; F = female.

D-5

YZ0014424

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DO 067769

Appendix D (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Litter Information - Group V (300 ppm)

Dam No.	Sire No. ^a	Gest. Length Days	Day 0						Pre-Cull				Post-Cull				Day 14		Day 21			
			Total Pups	No. Alive			No. Dead	Mean Pup Wt. g	No. Alive			Mean Pup Wt. g	No. Alive			Mean Pup Wt. g	No. Alive	Mean Pup Wt. g	No. Alive			Mean Pup Wt. g
				M	F	Total			M	F	Total		M	F	Total				M	F	Total	
1025	68	22	9	1	4	5	4	6.1	0	0	-	-	-	-	-	-	-	-	-	-	-	-
1026	64	22	15	9	6	15	0	5.6	9	6	15	9.2	5	5	10	9.1	9	15.0	4	5	9	24.5
1027	65	22	11	3	6	9	2	6.6	3	6	9	10.7	3	6	9	10.7	9	22.2	3	6	9	36.8
1028	70	22	12	7	5	12	0	5.9	6	4	10	6.1	6	4	10	6.1	8	16.2	6	3	9	23.8
1029	66	21	11	6	5	11	0	5.6	6	5	11	9.3	5	5	10	9.2	10	20.7	5	5	10	28.1
1030	66	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
1031	67	22	8	0	2	2	[6]c	7.0	0	2	2	13.1	0	2	2	13.1	2	28.0	0	2	2	46.8
1032	67	21	15	10	5	15	0	5.4	10	5	15	8.2	5	5	10	8.1	10	22.5	5	5	10	33.2
1033	68	21	17	5	6	11	0	5.4	5	6	11	9.4	5	5	10	9.5	10	22.0	5	5	10	37.0
1034	68	22	11	6	5	11	0	5.9	6	5	11	8.8	5	5	10	8.8	9	21.9	4	5	9	31.7
1035	69	21	13	8	5	13	0	6.0	8	5	13	9.8	5	5	10	9.9	10	22.1	5	5	10	34.6
1036	69	21	14	9	5	14	0	5.6	9	5	14	8.4	5	5	10	8.3	10	21.0	5	5	10	30.9
1037	70	22	13	6	7	13	0	6.2	6	7	13	9.4	5	5	10	9.6	10	21.6	5	5	10	34.5
1038	70	21	15	5	10	15	0	5.5	5	10	15	8.3	5	5	10	8.3	10	20.7	5	5	10	31.8
1039	71	22	11	4	6	10	1	5.6	4	6	10	9.8	4	6	10	9.8	10	21.6	4	6	10	32.5
1040	71	22	15	8	7	15	0	6.6	8	7	15	9.5	5	5	10	9.6	10	24.2	5	5	10	40.6
1041	72	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
1042	72	21	10	3	7	10	0	5.8	3	7	10	10.3	3	7	10	10.3	10	21.0	3	7	10	34.0
1043	73	21	8	5	3	8	0	5.6	5	3	8	9.8	5	3	8	9.8	8	19.3	5	3	8	30.4
1044	73	21	15	11	4	15	0	5.5	11	3	14	8.5	7	3	10	8.5	10	21.6	7	3	10	34.4
1045	74	22	10	5	3	8	2	6.5	5	3	8	10.0	5	3	8	10.0	8	21.2	5	2	7	37.0
1046	74	21	16	10	6	16	0	5.8	10	6	16	8.6	5	5	10	8.5	10	19.7	5	5	10	28.7
1047	75	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
1048	75	23	5	3	2	5	0	7.4	3	2	5	13.9	3	2	5	13.9	5	26.5	3	2	5	42.1
1049	77	22	15	11	4	15	0	6.1	11	4	15	10.3	6	4	10	10.2	10	25.3	6	4	10	40.9
1050	77	22	13	9	4	13	0	6.4	9	4	13	9.9	6	4	10	9.8	10	21.0	6	4	10	34.0
Total		497	276	144	117	261	15	138.1	142	111	253	211.3	103	99	202	211.1	198	475.3	101	97	198	748.3
Mean		21.6	12.0	6.3	5.1	11.3	0.7	6.0	6.2	4.8	11.5	9.6	4.7	4.5	9.2	9.6	9.0	21.6	4.6	4.4	9.0	34.0
S.D.		0.6	2.9	3.1	1.8	3.8	1.5	0.5	3.0	1.9	3.6	1.6	1.4	1.3	2.0	1.6	2.0	2.9	1.4	1.4	2.0	5.5
S.E.		0.1	0.6	0.6	0.4	0.8	0.3	0.7	0.6	0.4	0.8	0.3	0.3	0.3	0.4	0.3	0.4	0.6	0.3	0.3	0.4	1.2
N		23	23	23	23	23	23	23	23	23	22	22	22	22	22	22	22	22	22	22	22	22

No statistically significant differences from the control group.
Key: M = male; F = female.

D-6

YZ0014425

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DO 067770

Appendix D (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Litter Information - Group IV (30 ppm)

Dam No.	Sire No. ^a	Gest. Length Days	Day 0						Day 4				Day 14				Day 21					
			Total Pups	No. Alive			No. Dead	Mean Pup Wt. g	Pre-Cull			Mean Pup Wt. g	Post-Cull			No. Alive	Mean Pup Wt. g	No. Alive			Mean Pup Wt. g	
				M	F	Total			M	F	Total		M	F	Total			M	F	Total		
825	51	22	13	4	9	13	0	6.9	4	9	13	9.1	4	6	10	9.1	10	21.0	4	6	10	34.0
826	51	22	13	3	10	13	0	6.2	3	10	13	9.8	3	7	10	10.0	10	24.4	3	7	10	37.7
827	52	22	14	8	6	14	0	6.2	8	6	14	10.5	5	5	10	10.6	10	25.2	5	5	10	38.2
828	52	22	10	3	7	10	0	6.6	3	7	10	10.2	3	7	10	10.2	10	19.6	3	7	10	32.1
829 ^d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
830	53	22	9	3	6	9	0	6.1	3	6	9	11.3	3	6	9	11.3	9	26.5	3	6	9	40.3
831	54	22	11	7	4	11	0	6.2	7	4	11	9.5	6	4	10	9.5	10	19.3	6	4	10	30.3
832 ^e	54	Mating confirmed; no evidence of parturition; however, 23 implantation scars noted at term sacrifice.																				
833	55	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
834	55	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
835	56	22	15	8	7	15	0	5.9	8	7	15	8.5	5	5	10	8.4	10	21.3	5	5	10	32.5
836	56	Mating confirmed; no evidence of parturition; however, 14 implantation scars noted at term sacrifice.																				
837 ^f	57	22	5	2	3	5	0	6.9	2	4	6	11.7	2	4	6	11.7	6	26.5	2	4	6	41.3
838	57	21	15	7	8	15	0	5.9	7	8	15	9.1	5	5	10	9.4	10	24.2	5	5	10	38.0
839	58	21	14	6	8	14	0	5.5	6	8	14	8.7	5	5	10	8.6	10	20.7	5	5	10	31.0
840	58	21	11	6	5	11	0	5.7	6	5	11	8.9	5	5	10	8.8	10	18.4	5	5	10	26.9
841	59	21	13	8	5	13	0	5.4	8	5	13	8.1	5	5	10	8.1	10	20.2	5	5	10	30.3
842	59	22	15	4	11	15	0	5.7	3	11	14	8.3	3	7	10	8.4	10	20.0	3	7	10	30.6
843	60	22	6	3	3	6	0	7.1	3	3	6	13.1	3	3	6	13.1	6	27.7	3	3	6	43.9
844	60	21	13	3	10	13	0	5.5	3	10	13	8.4	3	7	10	8.4	10	20.6	3	7	10	29.8
845	61	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
846	61	22	15	8	5	13	2	5.7	8	5	13	7.8	5	5	10	7.9	9	18.7	4	5	9	30.5
847	62	22	13	5	8	13	0	6.6	5	8	13	9.5	5	5	10	9.5	10	18.8	5	5	10	31.1
848	62	22	13	9	4	13	0	6.1	9	4	13	9.3	6	4	10	9.3	10	20.0	6	4	10	31.6
849	63	22	7	4	3	7	0	7.8	4	3	7	13.8	4	3	7	13.8	7	29.3	4	3	7	44.9
850	63	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																				
Total		413	225	101	122	223	2	118.0	100	123	223	185.6	80	98	178	186.1	177	422.4	79	98	177	655.0
Mean		21.7	11.8	5.3	6.4	11.7	0.1	6.2	5.3	6.5	11.7	9.8	4.2	5.2	9.4	9.8	9.3	22.2	4.2	5.2	9.3	34.5
S.D.		0.5	3.1	2.3	2.5	3.0	0.5	0.6	2.3	2.5	2.9	1.7	1.2	1.3	1.4	1.7	1.4	3.4	1.2	1.3	1.4	5.3
S.E.		0.1	0.7	0.5	0.6	0.7	0.1	0.2	0.5	0.6	0.7	0.4	0.3	0.3	0.3	0.4	0.3	0.8	0.3	0.3	0.3	1.2
N		19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19

No statistically significant differences from the control group.
Key: M = male; F = female.

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Appendix D (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

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Litter Information - Group V (300 ppm)

Dam No.	Sire No. ^a	Gest. Length Days	Day 0							Day 4				Post-Cull				Day 14		Day 21				Mean Pup Wt. g
			Total Pups	No. Alive			No. Dead	Mean Pup Wt. g	Pre-Cull			Mean Pup Wt. g	No. Alive			Mean Pup Wt. g	No. Alive	Mean Pup Wt. g	No. Alive					
				M	F	Total			M	F	Total		M	F	Total				M	F	Total			
1025	68	22	9	1	4	5	4	6.1	0	0	-	-	-	-	-	-	-	-	-	-	-	-		
1026	64	22	15	9	6	15	0	5.6	9	6	15	9.2	5	5	10	9.1	9	15.0	4	5	9	24.5		
1027	65	22	11	3	6	9	2	6.6	3	6	9	10.7	3	6	9	10.7	9	22.2	3	6	9	36.8		
1028	70	22	12	7	5	12	0	5.9	6	4	10	6.1	6	4	10	6.1	8	16.2	6	3	9	23.8		
1029	66	21	11	6	5	11	0	5.6	6	5	11	9.3	5	5	10	9.2	10	20.7	5	5	10	28.1		
1030	66	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																						
1031	67	22	8	0	2	2	[6] ^c	7.0	0	2	2	13.1	0	2	2	13.1	2	28.0	0	2	2	46.8		
1032	67	21	15	10	5	15	0	5.4	10	5	15	8.2	5	5	10	8.1	10	22.5	5	5	10	33.2		
1033	68	21	11	5	6	11	0	5.4	5	6	11	9.4	5	5	10	9.5	10	22.0	5	5	10	37.0		
1034	68	22	11	6	5	11	0	5.9	6	5	11	8.8	5	5	10	8.8	9	21.9	4	5	9	31.7		
1035	69	21	13	8	5	13	0	6.0	8	5	13	9.8	5	5	10	9.9	10	22.1	5	5	10	34.6		
1036	69	21	14	9	5	14	0	5.6	9	5	14	8.4	5	5	10	8.3	10	21.0	5	5	10	30.9		
1037	70	22	13	6	7	13	0	6.2	6	7	13	9.4	5	5	10	9.6	10	21.6	5	5	10	34.5		
1038	70	21	15	5	10	15	0	5.5	5	10	15	8.3	5	5	10	8.3	10	20.7	5	5	10	31.8		
1039	71	22	11	4	6	10	1	5.6	4	6	10	9.8	4	6	10	9.8	10	21.6	4	6	10	32.5		
1040	71	22	15	8	7	15	0	6.6	8	7	15	9.5	5	5	10	9.6	10	24.2	5	5	10	40.6		
1041	72	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																						
1042	72	21	10	3	7	10	0	5.8	3	7	10	10.3	3	7	10	10.3	10	21.0	3	7	10	34.0		
1043	73	21	8	5	3	8	0	5.6	5	3	8	9.8	5	3	8	9.8	8	19.3	5	3	8	30.4		
1044	73	21	15	11	4	15	0	5.5	11	3	14	8.5	7	3	10	8.5	10	21.6	7	3	10	34.4		
1045	74	22	10	5	3	8	2	6.5	5	3	8	10.0	5	3	8	10.0	8	21.2	5	2	7	37.0		
1046	74	21	16	10	6	16	0	5.8	10	6	16	8.6	5	5	10	8.5	10	19.7	5	5	10	28.7		
1047	75	Mating confirmed; no evidence of parturition; no implant scars at term sacrifice- not pregnant.																						
1048	75	23	5	3	2	5	0	7.4	3	2	5	13.9	3	2	5	13.9	5	26.5	3	2	5	42.1		
1049	77	22	15	11	4	15	0	6.1	11	4	15	10.3	6	4	10	10.2	10	25.3	6	4	10	40.9		
1050	77	22	13	9	4	13	0	6.4	9	4	13	9.9	6	4	10	9.8	10	21.0	6	4	10	34.0		
Total		497	276	144	117	261	15	138.1	142	111	253	211.3	103	99	202	211.1	198	475.3	101	97	198	748.3		
Mean		21.6	12.0	6.3	5.1	11.3	0.7	6.0	6.2	4.8	11.5	9.6	4.7	4.5	9.2	9.6	9.0	21.6	4.6	4.4	9.0	34.0		
S.D.		0.6	2.9	3.1	1.8	3.8	1.5	0.5	3.0	1.9	3.6	1.6	1.4	1.3	2.0	1.6	2.0	2.9	1.4	1.4	2.0	5.5		
S.E.		0.1	0.6	0.6	0.4	0.8	0.3	0.1	0.6	0.4	0.8	0.3	0.3	0.3	0.4	0.3	0.4	0.6	0.3	0.3	0.4	1.2		
N		23	23	23	23	23	23	23	23	23	22	22	22	22	22	22	22	22	22	22	22	22		

No statistically significant differences from the control group.
Key: M = male; F = female.

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Appendix E
An Inhalation Female Fertility Study
with Benzene in Rats

Implantation Scar and Unaccounted-for-Concepti Data
Group I (Control) - 0 ppm

Female No.	No. of Implantation Scars			Total No. Pups at Birth	Unaccounted-for - Concepti K ⁻
	R	L	Total A ⁻		
225	4	3	7	6	1
226	7	9	16	15	1
227	7	7	14	13	1
228	2	8	10	10	0
229	9	5	14	14	0
230	5	6	11	11	0
231	6	6	12	11	1
232 ^c	1	0	1	1	0
233	4	11	15	14	1
234 ^b	(0)	(0)	(0)	(0)	-
235	7	8	15	11	4
236	5	6	11	10	1
237	7	5	12	10	2
238	5	9	14	13	1
239	9	7	16	12	4
240	8	4	12	12	0
241 ^b	(0)	(0)	(0)	(0)	-
242	8	6	14	13	1
243	14	5	19	17	2
244	10	5	15	13	2
245 ^b	(0)	(0)	(0)	(0)	-
246	4	2	6	5	1
247	5	7	12	11	1
248 ^a	(4)	(13)	(17)	(0)	(17)
249	5	9	14	13	1
250	2	13	15	12	3
Total:			275	247	28
Mean:			12.5	11.2	1.3
N:			22	22	22

For explanation of statistical symbols: A⁻ and K⁻; see Appendix Q.

Key: R = right uterine horn; L = left uterine horn.

^aFemale did not deliver a litter; however, implantation scar(s) was observed at term sacrifice; data in parentheses excluded from calculations.

^bFemale did not deliver a litter; data in parentheses excluded from calculations.

^cFemale initiated delivery; one pup noted in vaginal canal. This pup was apparently cannabilized prior to Day 0 litter examination.

Appendix E (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Implantation Scar and Unaccounted-for-Concepti Data
Group II - (1 ppm)

Female No.	No. of Implantation Scars			Total No. Pups at Birth	Unaccounted-for - Concepti
	R	L	Total		
425	7	7	14	14	0
426	6	8	14	13	1
427 ^b	(0)	(0)	(0)	(0)	-
428	5	8	13	13	0
429	8	6	14	14	0
430 ^a	(2)	(0)	(2)	(0)	(2)
431	7	8	15	14	1
432	5	7	12	12	0
433	5	9	14	13	1
434	5	8	13	13	0
435	7	4	11	11	0
436	8	2	10	10	0
437 ^d	(8)	(5)	(13)	(0)	-
438	7	6	13	13	0
439	8	4	12	10	2
440	9	8	17	16	1
441	8	7	15	14	1
442	8	5	13	12	1
443	5	5	10	10	0
444	6	10	16	7	9
445	4	10	14	13	1
446 ^d	(8)	(7)	(15)	(0)	-
447	5	8	13	11	2
448	5	6	11	10	1
449	2	0	2	2	0
450	6	9	15	15	0
Total:			281	260	20
Mean:			12.8	11.7	1.0
N:			22	22	22

No statistically significant differences from control.

Key: R = right uterine horn; L = left uterine horn.

^aFemale did not deliver a litter; however, implantation scars were observed at term sacrifice; data in parentheses excluded from calculations.

^bFemale did not deliver a litter; data in parentheses excluded from calculations.

^dFemale had no evidence of mating; sacrificed at completion of mating period and implantation sites were evident; data in parentheses excluded from calculations.

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Appendix E (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Implantation Scar and Unaccounted-for-Concepti Data
Group III - (10 ppm)

Female No.	No. of Implantation Scars			Total No. Pups at Birth	Unaccounted-for - Concepti
	R	L	Total		
625	10	5	15	11	4
626	7	7	14	13	1
627	5	6	11	11	0
628	7	9	16	14	2
629 ^b	(0)	(0)	(0)	(0)	-
630	9	4	13	13	0
631	5	0	5	5	0
632	8	9	17	15	2
633	9	2	11	10	1
634	8	7	15	13	2
635	8	7	15	14	1
636	2	3	5	5	0
637	9	6	15	15	0
638 ^b	(0)	(0)	(0)	(0)	-
639	7	6	13	13	0
640	5	9	14	13	1
641	7	7	14	13	1
642	8	7	15	14	1
643	7	9	16	15	1
644	10	6	16	16	0
645	8	5	13	13	0
646	9	6	15	15	0
647	6	6	12	11	1
648	6	6	12	11	1
649	6	10	16	16	0
650	5	8	13	13	0
Total:			321	302	19
Mean:			13.4	12.6	0.8
N:			24	24	24

No statistically significant differences from control.

Key: R = right uterine horn; L = left uterine horn.

^bFemale did not deliver a litter; data in parentheses excluded from calculations.

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Appendix E (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Implantation Scar and Unaccounted for-Concepti Data
Group IV - (30 ppm)

Female No.	No. of Implantation Scars			Total No. Pups at Birth	Unaccounted-for - Concepti
	R	L	Total		
825	7	6	13	13	0
826	11	3	14	13	1
827	9	7	16	14	2
828	3	8	11	10	1
829 ^e	-	-	-	-	-
830	6	5	11	9	2
831	8	5	13	11	2
832 ^a	(11)	(12)	(23)	(0)	(23)
833 ^b	(0)	(0)	(0)	(0)	-
834 ^b	(0)	(0)	(0)	(0)	-
835	8	7	15	15	0
836 ^a	(9)	(5)	(14)	(0)	(14)
837	7	1	8	5	3
838	7	9	16	15	1
839	7	7	14	14	0
840	6	6	12	11	1
841	8	7	15	13	2
842	6	11	17	15	2
843	6	0	6	6	0
844	7	7	14	13	1
845 ^b	(0)	(0)	(0)	(0)	-
846	8	8	16	15	1
847	5	8	13	13	0
848	8	6	14	13	1
849	2	6	8	7	1
850 ^b	(0)	(0)	(0)	(0)	-
Total:			246	225	21
Mean:			12.9	11.8	1.1
N:			19	19	19

No statistically significant differences from control.

Key: R = right uterine horn; L = left uterine horn.

^aFemale did not deliver a litter; however, implantation scar(s) was observed at term sacrifice; data in parentheses excluded from calculations.

^bFemale did not deliver a litter; data in parentheses excluded from calculations.

^eFemale was killed accidentally during Week 5 of the pre-mating treatment period.

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Appendix E (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Implantation Scar and Unaccounted-for-Concepti Data
Group V - (300 ppm)

Female No.	No. of Implantation Scars			Total No. Pups at Birth	Unaccounted-for - Concepti
	R	L	Total		
1025	11	0	11	9	2
1026	8	7	15	15	0
1027	11	6	17	11	6
1028	8	4	12	12	0
1029	7	5	12	11	1
1030 ^b	(0)	(0)	(0)	(0)	-
1031	11	5	16	8	8
1032	9	6	15	15	0
1033	9	4	13	11	2
1034	7	6	13	11	2
1035	6	7	13	13	0
1036	6	9	15	14	1
1037	4	11	15	13	2
1038	9	6	15	15	0
1039	4	8	12	11	1
1040	7	9	16	15	1
1041 ^b	(0)	(0)	(0)	(0)	-
1042	5	5	10	10	0
1043	8	4	12	8	4
1044	7	9	16	15	1
1045	7	3	10	10	0
1046	7	10	17	16	1
1047 ^b	(0)	(0)	(0)	(0)	-
1048	6	0	6	5	1
1049	9	6	15	15	0
1050	5	10	15	13	2
Total:			301	276	35
Mean:			13.5	12.0	1.5
N:			23	23	23

No statistically significant differences from control.
^bFemale did not deliver a litter; data in parentheses excluded from calculations.

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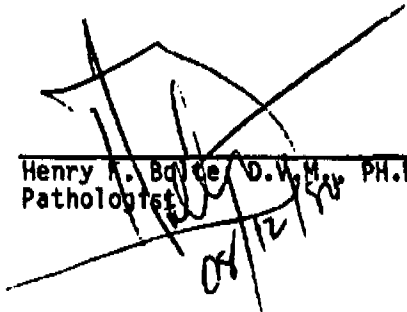
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Appendix F
An Inhalation Female Fertility Study
With Benzene in Rats

Gross Postmortem Observations - Females

PREFACE

Morphologic abnormalities observed grossly in the animals from this study occurred sporadically and do not appear to be compound-related.


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Pathologist

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Appendix F (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Females

<u>Group</u> ppm	<u>An. No.</u>	<u>Type of Death^a</u>	<u>Observation(s)^b</u>
I 0	225	T	N.O.A.
	226	T	N.O.A.
	227	T	N.O.A.
	228	T	N.O.A.
	229	T	N.O.A.
	230	T	N.O.A.
	231	T	N.O.A.
	232	T	N.O.A.
	233	T	N.O.A.
	234	T	N.O.A.
	235	T	N.O.A.
	236	T	N.O.A.
	237	T	N.O.A.
	238	T	N.O.A.
	239	T	N.O.A.
	240	T	N.O.A.
	241	P-M	N.O.A.
	242	T	N.O.A.
	243	T	N.O.A.
	244	T	N.O.A.
	245	T	N.O.A.
	246	T	N.O.A.
	247	T	N.O.A.
	248	T	Uterus: moderately distended area (0.4 X 0.3 cm.) filled with yellowish fluid on distal end of left horn. Distal end of right horn extremely distended (1.2 X 0.3 cm.); filled with clear fluid.
	249	T	N.O.A.
	250	T	N.O.A.
II 1	425	T	N.O.A.
	426	T	N.O.A.
	427	T	N.O.A.
	428	T	N.O.A.
	429	T	N.O.A.
	430	T	N.O.A.
	431	T	N.O.A.
	432	T	N.O.A.
	433	T	N.O.A.
	434	T	N.O.A.

^aT = Terminal; P-M = post-mating period.
^bN.O.A. = No observable abnormalities.

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Appendix F (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Females

Group ppm	An. No.	Type of Death ^a	Observation(s) ^b
II 1 (cont.)	435	T	N.O.A.
	436	T	N.O.A.
	437	P-M	N.O.A.
	438	T	N.O.A.
	439	T	N.O.A.
	440	T	N.O.A.
	441	T	N.O.A.
	442	T	N.O.A.
	443	T	N.O.A.
	444	T	N.O.A.
	445	T	N.O.A.
	446	P-M	N.O.A.
	447	T	N.O.A.
	448	M	Kidneys (Both): slight red renal papilla. Lungs: all lobes slightly red. Eye (Right): 20% opacities. Eye (Left): slight alopecia and red crusty material around the eye; cyst on surface (.1 cm. dm.); lens moderately protruding.
	449	T	N.O.A.
	450	T	N.O.A.
III 10	625	T	N.O.A.
	626	T	N.O.A.
	627	T	N.O.A.
	628	T	N.O.A.
	629	T	N.O.A.
	630	T	N.O.A.
	631	T	N.O.A.
	632	T	Ovary (Left): paraovarian cyst (0.3 cm. in diam.).
	633	T	N.O.A.
	634	T	N.O.A.
	635	T	N.O.A.
	636	T	N.O.A.
	637	T	N.O.A.
	638	T	N.O.A.
	639	T	N.O.A.
	640	T	N.O.A.
	641	T	N.O.A.

^aT = Terminal; M = Moribund; P-M = post-mating.
^bN.O.A. = No observable abnormalities.

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Appendix F (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Females

Group ppm	An. No.	Type of Death ^a	Observation(s) ^b
III 10 (cont.)	642	T	N.O.A.
	643	T	N.O.A.
	644	T	N.O.A.
	645	T	N.O.A.
	646	T	N.O.A.
	647	T	N.O.A.
	648	T	N.O.A.
	649	T	N.O.A.
	650	T	N.O.A.
IV 30	825	T	N.O.A.
	826	T	N.O.A.
	827	T	N.O.A.
	828	T	N.O.A.
	829	A	N.O.A.
	830	T	N.O.A.
	831	T	N.O.A.
	832	T	N.O.A.
	833	T	N.O.A.
	834	T	N.O.A.
	835	T	N.O.A.
	836	T	N.O.A.
	837	T	Uterus: distal end of left horn extremely distended with clear fluid.
	838	T	N.O.A.
	839	T	N.O.A.
	840	T	N.O.A.
	841	T	N.O.A.
	842	T	N.O.A.
	843	T	N.O.A.
	844	T	N.O.A.
	845	T	N.O.A.
	846	T	N.O.A.
	847	T	N.O.A.
	848	T	N.O.A.
	849	T	N.O.A.
	850	T	N.O.A.

^aT = Terminal; A = Accidental.

^bN.O.A. = No observable abnormalities.

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Appendix F (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Females

Group ppm	An. No.	Type of Death ^a	Observation(s) ^b
V 300	1025	T	N.O.A.
	1026	T	N.O.A.
	1027	T	N.O.A.
	1028	T	N.O.A.
	1029	T	Lungs: greenish-tan round nodule (approx. 0.6 cm. in diam.) on superior lobe of right lung; two greenish-tan round nodules on middle lobe of right lung (approx. 1.1 cm. and 1.0 cm. in diam.); greenish-tan round nodule on inferior lobe of right lung (approx. 0.5 cm. in diam.); greenish-tan round nodule (approx. 1.2 cm. in diam.) on left lobe. Right Lung: Masses on lobes; adhered to thoracic cavity; filled with a green caseous material.
	1030	T	N.O.A.
	1031	T	N.O.A.
	1032	T	N.O.A.
	1033	T	N.O.A.
	1034	T	Axillary Area (Left): tan mass subcutaneous (1.1 cm.).
	1035	T	N.O.A.
	1036	T	N.O.A.
	1037	T	N.O.A.
	1038	T	N.O.A.
	1039	T	N.O.A.
	1040	T	N.O.A.
	1041	T	N.O.A.
	1042	T	N.O.A.
	1043	T	N.O.A.
	1044	T	N.O.A.
	1045	T	N.O.A.
	1046	T	N.O.A.
	1047	T	N.O.A.
	1048	T	N.O.A.
	1049	T	N.O.A.
	1050	T	N.O.A.

^aT = Terminal.

^bN.O.A. = No observable abnormalities.

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Appendix F (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Females (cont.)

<u>Group</u> ppm	<u>An. No.</u>	<u>Type of Death^a</u>	<u>Observation(s)^b</u>
V 300	1025	T	N.O.A.
	1026	T	N.O.A.
	1027	T	N.O.A.
	1028	T	N.O.A.
	1029	T	<u>Lungs</u> : greenish-tan round nodule (approx. 0.6 cm. in diam.) on superior lobe of right lung; greenish-tan round nodules on middle lobe of right lung (approx. 1.1 cm. and 1.0 cm. in diam.); greenish-tan round nodule on inferior lobe of right lung (approx. 0.5 cm. in diam.); greenish-tan round nodule (approx. 1.2 cm. in diam.) on left lobe.
			<u>Right Lung</u> : Masses on lobes; adhered to thoracic cavity; filled with a green caseous material.
	1030	T	N.O.A.
	1031	T	N.O.A.
	1032	T	N.O.A.
	1033	T	N.O.A.
	1034	T	<u>Axillary Area (Left)</u> : tan mass (1.1 cm.).
	1035	T	N.O.A.
	1036	T	N.O.A.
	1037	T	N.O.A.
	1038	T	N.O.A.
	1039	T	N.O.A.
	1040	T	N.O.A.
	1041	T	N.O.A.
	1042	T	N.O.A.
	1043	T	N.O.A.
	1044	T	N.O.A.
	1045	T	N.O.A.
	1046	T	N.O.A.
	1047	T	N.O.A.
	1048	T	N.O.A.
	1049	T	N.O.A.
	1050	T	N.O.A.

^aT = Terminal.

^bN.O.A. = No observable abnormalities.

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G-1
Appendix G
An Inhalation Female Fertility Study
With Benzene in Rats

79-2425

Pup Organ Weight Data
Preface

L/BW = ratio of liver weight to body weight (Day 21).

K/BW = ratio of kidney weight to body weight (Day 21).

T/BW = ratio of testes weight to body weight (Day 21).

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G-1
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	POP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
1	M	225	1	0.135	1.330	0.476	41.4	0.0045360	0.0453596	0.0115700
1	M	225	2	0.143	1.320	0.474	37.7	0.0040000	0.0467297	0.0123103
1	M	226	1	0.171	1.754	0.442	40.0	0.0043940	0.0435023	0.0114372
1	M	226	2	0.160	1.502	0.403	36.9	0.0040473	0.0409733	0.0103152
1	M	226	3	0.144	1.430	0.404	35.3	0.0040225	0.0413403	0.0112349
1	M	226	4	0.222	1.236	0.339	34.1	0.0052941	0.0573235	0.0099412
1	M	226	5	0.139	1.254	0.324	30.6	0.0045630	0.0394663	0.0093397
1	M	227	1	0.132	1.304	0.494	40.2	0.0045122	0.0443755	0.0122336
1	M	227	2	0.241	2.043	0.422	42.3	0.0045952	0.0473505	0.0112617
1	M	227	3	0.151	1.611	0.399	35.3	0.0042173	0.0450000	0.0103659
1	M	227	4	0.159	1.535	0.361	37.6	0.0042021	0.0421011	0.0096011
1	M	227	5	0.155	1.551	0.333	34.6	0.0044797	0.0442436	0.0112139
1	M	229	1	0.152	1.753	0.344	32.5	0.0046769	0.0540923	0.0119154
1	M	229	2	0.145	1.450	0.336	32.0	0.0045312	0.0452125	0.0105000
1	M	229	3	0.129	1.350	0.345	30.0	0.0035333	0.0516339	0.0095333
1	M	229	4	0.160	2.270	0.427	41.9	0.0033180	0.0541766	0.0101909
1	M	229	5	0.151	1.115	0.343	32.9	0.0045997	0.0233299	0.0105775
1	M	229	6	0.113	1.222	0.377	30.1	0.0045347	0.0405930	0.0125249
1	M	229	7	0.144	1.071	0.332	29.7	0.0043434	0.0360606	0.0123956
1	M	229	8	0.104	0.900	0.309	30.1	0.0045515	0.0299203	0.0169103
1	M	229	9	0.135	0.975	0.331	30.4	0.0044079	0.0220724	0.0125329
1	M	230	1	0.159	1.727	0.456	40.0	0.0039750	0.0431750	0.0114000
1	M	230	2	0.153	2.002	0.436	39.6	0.0030390	0.0505556	0.0122727
1	M	230	3	0.137	1.903	0.431	39.9	0.0046367	0.0476193	0.0123559
1	M	230	4	0.179	1.912	0.431	41.1	0.0043552	0.0465207	0.0117022
1	M	230	5	0.131	2.149	0.530	42.6	0.0042433	0.0504460	0.0124413
1	M	230	6	0.133	2.205	0.556	41.2	0.0042361	0.0510417	0.0123704
1	M	231	1	0.162	1.743	0.520	39.5	0.0042077	0.0454026	0.0135065
1	M	231	2	0.141	1.530	0.420	37.4	0.0037705	0.0449193	0.0112299
1	M	231	3	0.147	1.405	0.470	39.9	0.0037790	0.0439717	0.0120323
1	M	231	4	0.174	2.010	0.473	39.3	0.0042964	0.0505025	0.0113944
1	M	231	5	0.177	1.955	0.404	40.2	0.0044029	0.0436313	0.0122336
1	M	231	6	0.202	1.771	0.446	41.0	0.0049263	0.0431951	0.0103730
1	M	231	7	0.169	1.509	0.422	33.7	0.0042669	0.0467442	0.0109044
1	M	231	8	0.163	1.334	0.392	35.6	0.0045735	0.0374719	0.0110112
1	M	231	9	0.192	1.773	0.439	40.0	0.0043000	0.0444500	0.0109750
1	M	231	10	0.176	1.339	0.425	36.9	0.0047696	0.0493103	0.0115176
1	M	231	11	0.171	1.651	0.517	39.3	0.0044724	0.0460201	0.0129399
1	M	231	12	0.207	2.297	0.553	45.0	0.0046500	0.0510444	0.0122339
1	M	231	13	0.213	2.102	0.515	45.4	0.0046029	0.0439947	0.0113654
1	M	231	14	0.164	2.530	0.504	45.5	0.0042647	0.0557163	0.0122747
1	M	231	15	0.206	2.070	0.541	46.0	0.0051204	0.0509130	0.0121304

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G-2
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
I	M	235	6	0.234	2.434	0.617	47.0	0.00491489	0.0517872	0.0131277
I	M	236	1	0.069	0.932	0.258	23.7	0.00291439	0.0393249	0.0108861
I	M	236	2	0.164	4.564	0.407	39.5	0.00407595	0.0395949	0.0103038
I	M	236	3	0.122	1.359	0.397	34.4	0.00357774	0.0398534	0.0116422
I	M	236	4	0.148	4.515	0.428	36.7	0.00403270	0.0412807	0.0116621
I	M	237	1	0.178	1.824	0.494	40.0	0.00445000	0.0456000	0.0123500
I	M	237	2	0.188	2.134	0.554	45.8	0.00410480	0.0465939	0.0120961
I	M	237	3	0.497	1.844	0.505	40.5	0.00486420	0.0455309	0.0124694
I	M	237	4	0.204	1.991	0.486	42.1	0.00484561	0.0472922	0.0115439
I	M	237	5	0.178	2.041	0.494	39.0	0.00456410	0.0523333	0.0126667
I	M	238	1	0.152	1.360	0.387	34.9	0.00476489	0.0426332	0.0121317
I	M	238	2	0.156	1.664	0.441	33.0	0.00472727	0.0504242	0.0133636
I	M	238	3	0.159	1.699	0.403	35.7	0.00445378	0.0475910	0.0112825
I	M	238	4	0.148	4.398	0.396	32.0	0.00462500	0.0436875	0.0123750
I	M	238	5	0.142	4.539	0.422	33.2	0.00427744	0.0463554	0.0127408
I	M	238	6	0.152	1.571	0.384	34.6	0.00439306	0.0454046	0.0140416
I	M	239	1	0.491	2.435	0.516	42.9	0.00445224	0.0567599	0.0120280
I	M	239	2	0.192	4.914	0.523	41.8	0.00459330	0.0457895	0.0125120
I	M	239	3	0.176	1.818	0.452	40.9	0.00430348	0.0444499	0.0140513
I	M	239	4	0.204	2.002	0.482	42.6	0.00478873	0.0469953	0.0143146
I	M	239	5	0.199	2.307	0.545	45.0	0.00442222	0.0512667	0.0124444
I	M	239	6	0.184	2.248	0.496	49.7	0.00370224	0.0452314	0.0099799
I	M	240	4	0.467	4.452	0.414	35.6	0.00469104	0.0407865	0.0145449
I	M	240	2	0.485	4.648	0.452	37.3	0.00495979	0.0444823	0.0121180
I	M	240	3	0.441	4.728	0.429	34.9	0.00404014	0.0495129	0.0122923
I	M	240	4	0.132	4.522	0.447	36.0	0.00366667	0.0422778	0.0124167
I	M	240	5	0.170	4.534	0.433	38.0	0.00447368	0.0403684	0.0143947
I	M	242	4	0.145	4.234	0.400	34.1	0.00425220	0.0364877	0.0117302
I	M	242	2	0.448	1.668	0.502	37.9	0.00390501	0.0440106	0.0132454
I	M	242	3	0.172	4.603	0.439	36.6	0.00469945	0.0437978	0.0119945
I	M	242	4	0.152	4.592	0.468	36.9	0.00414924	0.0434436	0.0126829
I	M	242	5	0.167	4.939	0.444	37.0	0.00454354	0.0524054	0.0119189
I	M	243	4	0.466	1.749	0.440	39.7	0.00418436	0.0440554	0.0140831
I	M	243	2	0.430	4.599	0.396	34.4	0.00377907	0.0464826	0.0115116
I	M	243	3	0.439	1.333	0.358	34.0	0.00448387	0.0430000	0.0145484
I	M	243	4	0.438	4.691	0.425	34.7	0.00397695	0.0487320	0.0122478
I	M	243	5	0.453	1.455	0.394	33.3	0.00459459	0.0436937	0.0118310
I	M	244	1	0.058	0.834	0.218	20.9	0.00277542	0.0399043	0.0104306
I	M	244	2	0.049	0.810	0.248	23.2	0.00214207	0.0349138	0.0106897
I	M	244	3	0.012	0.807	0.234	22.5	0.00053333	0.0354667	0.0104000
I	M	244	4	0.054	0.844	0.264	24.6	0.00250000	0.0390741	0.0122222
I	M	246	4	0.195	2.289	0.598	46.3	0.00421166	0.0494384	0.0129158

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G-3
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	POP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
I	M	246	2	0.479	1.913	0.495	49.0	0.00365306	0.0390408	0.0101020
I	M	246	3	0.191	2.357	0.576	46.0	0.00415247	0.0512391	0.0125217
I	M	246	4	0.472	2.080	0.540	44.3	0.00388262	0.0469526	0.0124896
I	M	247	1	0.446	1.321	0.359	32.7	0.00446483	0.0403976	0.0109786
I	M	247	2	0.439	1.339	0.371	31.9	0.00435737	0.0419749	0.0116304
I	M	247	3	0.452	1.439	0.413	35.9	0.00423398	0.0400836	0.0115042
I	M	247	4	0.442	1.458	0.379	34.5	0.00414594	0.0422609	0.0109855
I	M	249	4	0.134	1.267	0.344	33.7	0.00397626	0.0375964	0.0102077
I	M	249	2	0.440	1.574	0.402	36.9	0.00379404	0.0426558	0.0108943
I	M	249	3	0.174	1.771	0.459	39.3	0.00442748	0.0450636	0.0116794
I	M	249	4	0.147	1.617	0.520	34.6	0.00424855	0.0467341	0.0150289
I	M	249	5	0.152	1.812	0.478	37.0	0.00410841	0.0489730	0.0129189
I	M	250	4	0.243	2.065	0.550	45.9	0.00464052	0.0449891	0.0149826
I	M	250	2	0.193	2.117	0.498	43.0	0.00448837	0.0492326	0.0115814
I	M	250	3	0.268	2.122	0.491	44.9	0.00596882	0.0472606	0.0109354
I	M	250	4	0.145	1.918	0.502	41.3	0.00351090	0.0464407	0.0121550
I	M	250	5	0.487	2.060	0.502	43.5	0.00429885	0.0473563	0.01145402
MEAN				0.162	1.705	0.443	37.6	0.00426	0.04493	0.01177
S.D.				0.037	0.390	0.080	5.7	0.00068	0.00513	0.00108
N				101	101	101	101	101	101	101

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G-4
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
II	M	425	1	0.457	1.751	0.457	37.0	0.00424324	0.0473243	0.0423514
II	M	425	2	0.462	1.581	0.452	35.9	0.00451253	0.0440390	0.0125905
II	M	425	3	0.176	4.537	0.385	36.3	0.00484848	0.0423416	0.0106061
II	M	425	4	0.172	4.630	0.478	37.5	0.00458667	0.0434667	0.0127467
II	M	425	5	0.162	1.433	0.438	34.8	0.00465517	0.0411782	0.0125862
II	M	426	1	0.190	1.940	0.446	39.6	0.00479798	0.0480899	0.0142626
II	M	426	2	0.199	1.938	0.479	40.0	0.00497500	0.0484500	0.0197550
II	M	426	3	0.209	1.878	0.457	39.8	0.00525126	0.0471859	0.0144824
II	M	428	4	0.159	1.561	0.398	26.3	0.00438047	0.0430028	0.0109642
II	M	428	2	0.204	2.210	0.504	46.0	0.00443478	0.0480435	0.0109565
II	M	428	3	0.478	2.216	0.533	46.9	0.00379531	0.0472495	0.0143646
II	M	428	4	0.165	1.775	0.435	37.3	0.00442359	0.0475874	0.0116622
II	M	428	5	0.470	2.084	0.437	43.2	0.00393519	0.0484743	0.0104157
II	M	429	1	0.254	2.014	0.500	43.5	0.00577011	0.0462299	0.0144943
II	M	429	2	0.233	2.457	0.579	46.5	0.00501075	0.0463874	0.0124516
II	M	429	3	0.181	4.830	0.508	44.8	0.00433014	0.0437799	0.0121534
II	M	429	4	0.469	4.564	0.534	38.6	0.00437824	0.0405181	0.0138342
II	M	429	5	0.187	2.430	0.495	43.0	0.00434884	0.0495349	0.0115416
II	M	434	1	0.452	1.350	0.456	33.0	0.00460606	0.0409091	0.0138482
II	M	434	2	0.174	4.643	0.510	39.7	0.00438287	0.0443854	0.0128463
II	M	434	3	0.419	1.229	0.372	29.8	0.00399329	0.0442446	0.0124832
II	M	434	4	0.410	4.161	0.385	30.3	0.00363036	0.0383168	0.0127063
II	M	434	5	0.455	1.363	0.481	35.7	0.00434474	0.0381793	0.0134734
II	M	432	1	0.185	1.249	0.391	33.3	0.00555556	0.0375075	0.0147447
II	M	432	2	0.496	1.349	0.406	33.9	0.00578171	0.0397935	0.0149764
II	M	432	3	0.432	4.189	0.359	29.9	0.00441472	0.0397659	0.0120067
II	M	432	4	0.483	4.455	0.428	33.3	0.00549550	0.0436937	0.0128529
II	M	432	5	0.242	4.153	0.334	30.7	0.00690554	0.0375570	0.0107818
II	M	433	1	0.459	4.335	0.362	33.2	0.00478916	0.0402108	0.0109036
II	M	433	2	0.458	4.249	0.387	36.5	0.00432877	0.042192	0.0106027
II	M	433	3	0.457	4.281	0.367	33.0	0.00475758	0.0388182	0.0144242
II	M	433	4	0.445	4.207	0.359	34.0	0.00467742	0.0389355	0.0115806
II	M	433	5	0.462	1.619	0.404	35.6	0.00455056	0.0454775	0.0143483
II	M	434	1	0.479	4.562	0.374	34.8	0.00514368	0.0448851	0.0107474
II	M	434	2	0.446	1.483	0.399	34.0	0.00429412	0.0436176	0.0147353
II	M	434	3	0.198	4.267	0.394	35.4	0.00559322	0.0357910	0.0144299
II	M	434	4	0.474	4.674	0.400	36.7	0.00474144	0.0456134	0.0108992
II	M	434	5	0.167	4.474	0.412	35.8	0.00466480	0.0441732	0.0145084
II	M	434	6	0.486	1.690	0.438	37.5	0.00496000	0.0450667	0.0146800
II	M	435	1	0.467	4.562	0.414	38.0	0.00439474	0.0444053	0.0108947
II	M	435	2	0.444	4.418	0.368	35.2	0.00409091	0.0402844	0.0104545
II	M	435	3	0.451	1.373	0.362	32.9	0.00458967	0.0417325	0.0110030

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G-5
Appendix G (cont.)
An Inhalation Female Fertility Study
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79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
II	M	436	1	0.175	1.641	0.435	40.9	0.00427873	0.0404222	0.0406357
II	M	436	2	0.196	1.856	0.504	43.6	0.00449544	0.0425688	0.0444908
II	M	436	3	0.205	1.986	0.519	45.0	0.00455556	0.0441333	0.0445333
II	M	436	4	0.175	1.894	0.488	41.9	0.00417664	0.0452029	0.0416468
II	M	438	1	0.209	2.046	0.552	46.4	0.00450434	0.0440948	0.0418966
II	M	438	2	0.218	2.280	0.523	48.6	0.00448560	0.0469136	0.0107613
II	M	438	3	0.203	2.146	0.553	44.9	0.00452146	0.0477954	0.0123163
II	M	438	4	0.197	2.327	0.575	47.3	0.00416490	0.0491966	0.0421564
II	M	438	5	0.498	2.218	0.762	45.7	0.00433260	0.0485339	0.0466740
II	M	438	6	0.223	2.315	0.626	50.0	0.00446000	0.0463000	0.0425200
II	M	438	7	0.214	2.274	0.578	46.8	0.00450855	0.0485897	0.0123504
II	M	439	1	0.142	1.312	0.364	31.8	0.00446544	0.0442579	0.0413522
II	M	439	2	0.136	1.412	0.417	33.0	0.00412124	0.0427879	0.0126364
II	M	439	3	0.155	1.643	0.423	36.2	0.00428177	0.0453867	0.0116851
II	M	439	4	0.120	1.276	0.357	28.9	0.00415225	0.0441522	0.0123529
II	M	439	5	0.144	1.298	0.361	29.1	0.00494845	0.0446048	0.0124055
II	M	440	1	0.153	1.523	0.376	34.8	0.00439655	0.0437644	0.0108046
II	M	440	2	0.122	1.691	0.446	37.9	0.00480211	0.0446174	0.0117678
II	M	440	3	0.150	1.695	0.431	36.6	0.00409836	0.0463115	0.0117760
II	M	440	4	0.160	1.797	0.452	38.2	0.00418848	0.0470419	0.0119895
II	M	440	5	0.167	1.629	0.447	37.0	0.00451251	0.0456486	0.0120811
II	M	441	1	0.260	1.835	0.504	39.9	0.00451629	0.0459900	0.0126316
II	M	441	2	0.149	1.489	0.401	46.8	0.0031838	0.0318162	0.0085684
II	M	441	3	0.225	2.470	0.556	46.9	0.0047974	0.0462687	0.0448550
II	M	441	4	0.223	2.172	0.583	32.0	0.0069687	0.0678750	0.0482187
II	M	441	5	0.439	1.361	0.362	29.0	0.0047931	0.0469340	0.0124828
II	M	442	1	0.076	.	0.556	39.1	0.0019437	.	0.0142199
II	M	442	2	0.234	1.856	0.445	39.0	0.0059234	0.0475897	0.0444403
II	M	442	3	0.174	1.345	0.382	32.5	0.0053538	0.0443846	0.0147538
II	M	442	4	0.247	1.418	0.436	37.8	0.0057407	0.0375132	0.0145344
II	M	442	5	0.189	1.840	0.503	42.0	0.0045000	0.0461905	0.0419762
II	M	442	6	0.459	1.592	0.427	37.0	0.0042973	0.0430270	0.0445405
II	M	442	7	0.198	1.709	0.493	39.8	0.0049749	0.0429397	0.0123869
II	M	443	1	0.096	1.014	0.330	25.8	0.0037209	0.0393023	0.0427907
II	M	443	2	0.416	1.442	0.240	27.4	0.0042336	0.0405839	0.0087594
II	M	443	3	0.413	1.431	0.369	27.6	0.0040942	0.0409783	0.0433696
II	M	443	4	0.095	0.995	0.348	26.2	0.0036260	0.0379774	0.0432624
II	M	444	1	0.497	2.429	0.584	42.4	0.0046462	0.0502423	0.0437736
II	M	444	2	0.227	2.410	0.686	49.0	0.0046327	0.0491837	0.0140000
II	M	444	3	0.234	2.533	0.802	50.9	0.0045972	0.0497642	0.0457564
II	M	444	4	0.233	2.264	0.670	47.5	0.0049053	0.0476632	0.0441053
II	M	444	5	0.225	2.337	0.677	49.0	0.0045948	0.0476939	0.0438463

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G-6
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	POP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
II	M	444	6	0.199	2.136	0.565	42.7	0.0046604	0.0500234	0.0132319
II	M	445	4	0.479	4.863	0.513	43.0	0.0041628	0.0433256	0.0149302
II	M	445	2	0.171	4.846	0.459	39.9	0.0042857	0.0462657	0.0445030
II	M	445	3	0.248	2.432	0.536	47.0	0.0046383	0.0547447	0.0144043
II	M	445	4	0.478	4.732	0.507	40.3	0.0044169	0.0429777	0.0125806
II	M	445	5	0.202	2.437	0.543	44.4	0.0045805	0.0484580	0.0146327
II	M	447	4	0.477	2.206	0.568	44.5	0.0042654	0.0531566	0.0136867
II	M	447	2	0.472	4.734	0.559	37.7	0.0045623	0.0459151	0.0448276
II	M	447	3	0.195	2.210	0.637	43.7	0.0044622	0.0505721	0.0445767
II	M	447	4	0.492	4.925	0.524	40.9	0.0046944	0.0470660	0.0128117
II	M	447	5	0.188	4.996	0.489	45.0	0.0041778	0.0443556	0.0408667
II	M	447	6	0.473	4.765	0.488	38.6	0.0044819	0.0457254	0.0126425
II	M	448	4	0.135	4.284	0.429	30.9	0.0043689	0.0445534	0.0438835
II	M	448	2	0.449	4.468	0.367	30.0	0.0039667	0.0389333	0.0422333
II	M	448	3	0.135	4.173	0.390	28.9	0.0046713	0.0405882	0.0434948
II	M	448	4	0.465	4.404	0.385	32.4	0.0051402	0.0342994	0.0419938
II	M	448	5	0.437	4.321	0.431	34.4	0.0044051	0.0424759	0.0138585
II	M	448	6	0.532	4.239	0.395	29.0	0.0183448	0.0427241	0.0436207
II	M	448	7	0.429	4.144	0.376	29.7	0.0043434	0.0384175	0.0126599
II	M	449	1	0.071	0.714	0.272	46.5	0.0043030	0.0432727	0.0164848
II	M	449	2	0.065	0.789	0.250	16.0	0.0040625	0.0493125	0.0456250
II	M	450	1	0.246	2.276	0.596	50.5	0.0048713	0.0450693	0.0418020
II	M	450	2	0.209	2.438	0.608	51.2	0.0040820	0.0476172	0.0448750
II	M	450	3	0.242	2.406	0.546	48.4	0.0050000	0.0435124	0.0412810
II	M	450	4	0.217	2.388	0.525	50.0	0.0043400	0.0477600	0.0405000
II	M	450	5	0.208	2.539	0.598	46.9	0.0044350	0.0541365	0.0127505
II	M	450	6	0.213	2.844	0.702	53.2	0.0040030	0.0534586	0.0431955
MEAN				0.178	1.711	0.467	38.2	0.00470	0.04438	0.01226
S.D.				0.051	0.435	0.101	7.2	0.00145	0.00479	0.00145
N				111	110	111	111	111	110	111

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G-7
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LETTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
III	M	625	1	0.033	0.744	0.253	16.0	0.0023750	0.0465000	0.0453125
III	M	625	2	0.055	0.823	0.295	19.5	0.0029730	0.0447569	0.0154054
III	M	626	1	0.191	1.964	0.545	34.0	0.0053235	0.0577647	0.0160294
III	M	626	2	0.175	2.036	0.543	45.0	0.0040693	0.0435116	0.0126279
III	M	626	3	0.203	0.254	0.676	46.3	0.0043376	0.0050000	0.0144444
III	M	626	4	0.172	2.010	0.567	32.6	0.0052761	0.0616564	0.0173925
III	M	626	5	0.162	1.967	0.522	36.6	0.0044262	0.0510109	0.0142623
III	M	627	1	0.122	1.260	0.345	30.3	0.0040264	0.0415942	0.0113961
III	M	627	2	0.123	1.167	0.310	27.2	0.00452206	0.0429044	0.0413971
III	M	627	3	0.124	1.093	0.305	27.8	0.00446043	0.0393165	0.0109712
III	M	627	4	0.127	4.276	0.356	29.3	0.00433447	0.0435495	0.0121502
III	M	627	5	0.122	4.040	0.326	27.4	0.00450185	0.0383764	0.0120295
III	M	627	6	0.137	4.134	0.346	28.6	0.00479021	0.0396503	0.0120979
III	M	628	1	0.428	0.922	0.297	26.0	0.00492308	0.0354615	0.0114231
III	M	628	2	0.150	4.146	0.232	30.8	0.00487013	0.0372078	0.0075325
III	M	628	3	0.188	1.499	0.339	31.4	0.00598726	0.0381847	0.0107962
III	M	628	4	0.429	4.097	0.337	29.0	0.00444828	0.0378276	0.0116207
III	M	628	5	0.439	1.247	0.366	30.8	0.00451299	0.0404870	0.0118831
III	M	630	1	0.442	4.160	0.362	29.5	0.00379664	0.0393220	0.0422712
III	M	630	2	0.072	0.816	0.288	21.8	0.00330275	0.0374312	0.0132440
III	M	630	3	0.071	0.893	0.294	22.8	0.00311404	0.0391667	0.0428947
III	M	631	4	0.205	2.464	0.586	51.4	0.00401174	0.0482192	0.0144677
III	M	631	2	0.229	2.336	0.636	53.1	0.00431262	0.0439925	0.0119774
III	M	631	3	0.229	2.569	0.658	50.0	0.00458000	0.0513800	0.0131600
III	M	632	1	0.164	4.538	0.492	37.9	0.00424802	0.0405805	0.0129815
III	M	632	2	0.147	4.142	0.556	36.7	0.00318804	0.0314472	0.0151499
III	M	632	3	0.114	4.182	0.357	28.9	0.00384083	0.0408997	0.0123529
III	M	632	4	0.448	1.781	0.505	38.3	0.00386423	0.0465013	0.0131854
III	M	632	5	0.216	4.843	0.482	39.0	0.00553046	0.0464872	0.0423590
III	M	633	1	0.187	4.982	0.507	41.0	0.00456098	0.0483415	0.0123659
III	M	633	2	0.196	2.322	0.536	40.1	0.00488778	0.0579052	0.0133666
III	M	633	3	0.498	2.405	0.515	45.0	0.00440000	0.0467778	0.0114444
III	M	633	4	0.182	2.416	0.526	41.0	0.00443902	0.0516098	0.0428293
III	M	634	1	0.207	4.623	0.425	42.0	0.00492857	0.0386429	0.0401190
III	M	634	2	0.187	4.664	0.449	39.8	0.00469849	0.0417337	0.0412814
III	M	634	3	0.153	4.475	0.405	31.0	0.00493548	0.0475806	0.0130645
III	M	634	4	0.185	4.770	0.499	42.7	0.00433255	0.0444520	0.0416862
III	M	634	5	0.477	1.872	0.513	41.0	0.00431707	0.0456585	0.0425122
III	M	635	1	0.221	2.281	0.590	49.4	0.00447368	0.0464741	0.0419433
III	M	635	2	0.199	1.832	0.450	43.3	0.00459584	0.0423095	0.0103926
III	M	635	3	0.200	2.445	0.524	45.4	0.00440529	0.0472467	0.0415419
III	M	635	4	0.244	2.006	0.523	44.4	0.00481982	0.0451802	0.0417793

DO 067791
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YZ0014446

G-8
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
III	M	635	5	0.198	1.909	0.540	44.9	0.00472554	0.0455609	0.0128878
III	M	636	1	0.247	1.964	0.540	48.8	0.00506148	0.0402459	0.0140656
III	M	636	2	0.348	2.704	0.692	59.6	0.00533557	0.0453691	0.0116107
III	M	636	3	0.304	2.497	0.690	56.4	0.00539007	0.0442730	0.0122340
III	M	637	1	0.172	1.730	0.478	39.1	0.00439898	0.0442455	0.0122251
III	M	637	2	0.447	4.667	0.441	37.7	0.00389920	0.0442475	0.0116976
III	M	637	3	0.156	4.832	0.484	39.9	0.00390977	0.0459148	0.0120551
III	M	637	4	0.453	1.825	0.498	41.9	0.00365155	0.0435581	0.0148854
III	M	637	5	0.162	4.773	0.494	40.9	0.00396088	0.0433496	0.0120782
III	M	639	1	0.488	2.444	0.548	41.6	0.00451923	0.0507452	0.0431731
III	M	639	2	0.215	2.350	0.574	47.8	0.00449791	0.0494632	0.0120084
III	M	639	3	0.461	4.926	0.518	40.2	0.00400498	0.0479404	0.0128856
III	M	639	4	0.173	4.189	0.548	44.7	0.00387025	0.0265996	0.0122595
III	M	639	5	0.466	2.009	0.524	40.9	0.00405868	0.0491498	0.0127384
III	M	640	1	0.446	4.784	0.457	40.0	0.00365000	0.0445250	0.0114250
III	M	640	2	0.460	1.717	0.456	38.0	0.00421053	0.0451842	0.0120000
III	M	640	3	0.209	4.728	0.489	37.0	0.00564865	0.0467027	0.0132162
III	M	640	4	0.490	1.859	0.504	41.9	0.00453461	0.0443675	0.0120286
III	M	640	5	0.175	1.734	0.480	39.9	0.00438596	0.0434586	0.0120301
III	M	641	1	0.433	4.485	0.374	29.4	0.00452381	0.0403061	0.0126190
III	M	641	2	0.437	4.157	0.384	28.8	0.00475694	0.0401736	0.0132292
III	M	641	3	0.140	4.502	0.404	34.2	0.00409357	0.0439181	0.0118429
III	M	641	4	0.434	1.240	0.377	31.4	0.00426752	0.0394904	0.0120064
III	M	641	5	0.126	4.159	0.350	29.6	0.00425676	0.0394554	0.0118243
III	M	644	6	0.444	4.082	0.341	26.8	0.00414179	0.0403734	0.0127239
III	M	642	1	0.230	2.307	0.574	47.8	0.00484172	0.0482636	0.0120084
III	M	642	2	0.212	1.812	0.492	40.2	0.00527363	0.0450746	0.0122388
III	M	642	3	0.235	2.183	0.598	48.2	0.00487552	0.0452905	0.0124066
III	M	643	1	0.201	4.850	0.561	44.9	0.00479714	0.0444527	0.0133890
III	M	643	2	0.170	2.102	0.597	44.0	0.00386364	0.0477727	0.0435682
III	M	643	3	0.473	2.426	0.508	42.6	0.00406103	0.0499061	0.0449249
III	M	643	4	0.470	4.945	0.528	41.4	0.00410628	0.0469807	0.0127536
III	M	643	5	0.477	1.945	0.557	40.9	0.00432763	0.0475550	0.0436486
III	M	644	1	0.180	4.945	0.529	42.4	0.00427553	0.0461995	0.0425653
III	M	644	2	0.445	4.525	0.433	36.8	0.00394022	0.0414402	0.0147663
III	M	644	3	0.442	4.062	0.365	28.0	0.00400000	0.0379286	0.0130357
III	M	644	4	0.440	1.340	0.419	30.2	0.00463576	0.0443709	0.0438742
III	M	644	5	0.165	4.636	0.452	34.5	0.00523810	0.0519365	0.0443492
III	M	645	1	0.461	4.628	0.542	36.7	0.00438692	0.0443597	0.0139510
III	M	645	2	0.209	4.598	0.448	34.0	0.00614706	0.0470000	0.0422944
III	M	645	3	0.453	4.272	0.493	41.2	0.00371359	0.0308738	0.0449660
III	M	645	4	0.449	4.475	0.378	28.8	0.00413194	0.0407986	0.0434250

DO 067792
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YZ0014447

G-9
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
III	M	646	1	0.480	4.775	0.497	42.7	0.00424546	0.0415699	0.0416393
III	M	646	2	0.160	4.692	0.459	37.4	0.00427807	0.0452406	0.0422727
III	M	646	3	0.485	4.492	0.346	33.6	0.00491074	0.0354762	0.0402976
III	M	646	4	0.181	4.288	0.383	33.9	0.00533923	0.0379941	0.0442979
III	M	646	5	0.441	4.465	0.356	28.9	0.00487889	0.0403414	0.0123183
III	M	647	1	0.455	4.739	0.427	35.5	0.00436620	0.0489859	0.0420282
III	M	647	2	0.467	4.920	0.483	40.2	0.00415423	0.0477612	0.0420149
III	M	647	3	0.169	4.965	0.495	37.5	0.00450667	0.0524000	0.0132000
III	M	647	4	0.464	2.457	0.529	40.5	0.00404938	0.0532593	0.0130617
III	M	647	5	0.443	4.819	0.415	35.1	0.00407407	0.0518234	0.0418234
III	M	648	1	0.490	2.494	0.678	47.6	0.00399160	0.0523950	0.0442437
III	M	648	2	0.247	2.477	0.570	49.4	0.00500000	0.0501417	0.0415385
III	M	648	3	0.233	2.347	0.634	48.8	0.00477459	0.0480943	0.0429948
III	M	649	1	0.188	4.769	0.483	38.2	0.00485911	0.0463089	0.0426440
III	M	649	2	0.472	4.862	0.467	38.9	0.00442159	0.0478663	0.0420054
III	M	649	3	0.185	4.749	0.417	37.9	0.00488127	0.0453562	0.0410026
III	M	649	4	0.472	4.806	0.468	39.9	0.00431078	0.0452632	0.04147293
III	M	649	5	0.179	4.841	0.446	38.9	0.00460154	0.0473265	0.0414653
III	M	649	6	0.200	2.458	0.565	42.0	0.00476190	0.0513810	0.0134524
III	M	650	1	0.174	4.599	0.432	36.0	0.00475000	0.0444167	0.0420000
III	M	650	2	0.468	2.033	0.481	41.0	0.00409756	0.0495854	0.0147317
III	M	650	3	0.476	4.819	0.462	38.9	0.00452442	0.0467609	0.0418766
III	M	650	4	0.427	2.420	0.510	40.2	0.00315920	0.0527363	0.0426866
III	M	650	5	0.204	4.769	0.475	40.0	0.00502500	0.0442250	0.0418750
MEAN				0.169	1.693	0.469	38.0	0.00443	0.04435	0.01241
S.D.				0.043	0.465	0.099	7.7	0.00059	0.00665	0.00125
N				108	108	108	108	108	108	108

DO 067793
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YZ0014448

G-10
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	POP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
IV	M	825	4	0.463	1.559	0.474	36.4	0.00451524	0.0434856	0.0434302
IV	M	825	2	0.188	4.379	0.419	33.0	0.00569697	0.0417879	0.0426970
IV	M	825	3	0.442	4.639	0.466	35.3	0.00402266	0.0464306	0.0432044
IV	M	825	4	0.174	4.817	0.453	36.4	0.00469780	0.0499176	0.0424454
IV	M	826	1	0.474	1.476	0.409	35.8	0.00486034	0.0412291	0.0444246
IV	M	826	2	0.452	4.713	0.445	36.7	0.00414169	0.0466757	0.0421253
IV	M	826	3	0.485	1.934	0.499	42.5	0.00435294	0.0455059	0.0417412
IV	M	827	1	0.212	2.132	0.509	44.7	0.00508393	0.0544271	0.0422062
IV	M	827	2	0.491	4.604	0.422	36.7	0.00520436	0.0437057	0.0414986
IV	M	827	3	0.183	1.667	0.461	37.5	0.00488000	0.0444533	0.0422933
IV	M	827	4	0.203	2.067	0.492	41.5	0.00489157	0.0498072	0.0418554
IV	M	827	5	0.490	1.819	0.475	39.9	0.00476490	0.0455890	0.0449048
IV	M	828	1	0.126	4.415	0.389	30.8	0.00409091	0.0459416	0.0426299
IV	M	828	2	0.454	4.773	0.444	36.9	0.00417344	0.0480488	0.0420325
IV	M	828	3	0.142	1.071	0.333	25.9	0.00548263	0.0443514	0.0428571
IV	M	830	1	0.485	4.822	0.503	39.6	0.00467172	0.0460101	0.0427020
IV	M	830	2	0.195	4.445	0.534	38.0	0.00513158	0.0380263	0.0440526
IV	M	830	3	0.285	4.361	0.449	35.8	0.00796089	0.0380168	0.0425419
IV	M	834	1	0.127	4.236	0.342	28.1	0.00451957	0.0439858	0.0421708
IV	M	834	2	0.446	4.096	0.295	26.1	0.00444444	0.0449923	0.0443027
IV	M	834	3	0.417	4.347	0.353	30.0	0.00390000	0.0449000	0.0417667
IV	M	834	4	0.155	4.732	0.429	34.0	0.00455882	0.0509412	0.0426476
IV	M	834	5	0.130	4.607	0.395	32.1	0.00404984	0.0500623	0.0423053
IV	M	834	6	0.401	4.417	.	25.0	0.00404000	0.0446800	.
IV	M	835	4	0.442	4.637	0.455	35.0	0.00405714	0.0467714	0.0430000
IV	M	835	2	0.449	4.903	0.462	34.0	0.00438235	0.0559706	0.0435882
IV	M	835	3	0.138	4.387	0.402	30.8	0.00448052	0.0450325	0.0430519
IV	M	835	4	0.444	4.698	0.407	33.5	0.00429851	0.0506866	0.0424493
IV	M	835	5	0.457	4.800	0.426	35.4	0.00447293	0.0542821	0.0424368
IV	M	837	1	0.482	2.495	0.555	41.8	0.00435407	0.0596890	0.0432775
IV	M	837	2	0.202	2.127	0.581	43.0	0.00469767	0.0494654	0.0435416
IV	M	838	1	0.449	4.845	0.528	36.0	0.00392405	0.0485526	0.0438947
IV	M	838	2	0.167	4.987	0.558	42.0	0.00397619	0.0473095	0.0432857
IV	M	838	3	0.433	4.761	0.469	39.0	0.00344026	0.0451538	0.0420256
IV	M	838	4	0.154	4.763	0.461	38.1	0.00404199	0.0462730	0.0420997
IV	M	838	5	0.449	4.893	0.579	43.2	0.00344907	0.0438194	0.0434028
IV	M	839	4	0.133	4.303	0.345	33.0	0.00403030	0.0394848	0.0404545
IV	M	839	2	0.435	4.469	0.412	33.4	0.00404492	0.0439820	0.0423353
IV	M	839	3	0.444	4.053	0.393	31.9	0.00347962	0.0330094	0.0423197
IV	M	839	4	0.444	4.482	0.328	28.9	0.00384083	0.0408997	0.04143495
IV	M	839	5	0.108	4.247	0.353	29.9	0.00361204	0.0417057	0.0418060
IV	M	840	4	0.456	4.478	0.367	28.0	0.00557443	0.0420744	0.04131674

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G-11
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
IV	M	840	2	0.113	1.082	0.357	27.0	0.00418549	0.0400744	0.0132222
IV	M	840	3	0.439	1.431	0.394	27.7	0.00501805	0.0408303	0.0141455
IV	M	840	4	0.120	1.101	0.330	26.8	0.00447761	0.0410821	0.0423434
IV	M	840	5	0.429	1.407	0.248	27.1	0.00476015	0.0408487	0.0091543
IV	M	844	1	0.138	1.086	0.356	28.9	0.00477509	0.0375779	0.0123183
IV	M	844	2	0.443	1.280	0.407	32.5	0.00440000	0.0393846	0.0425234
IV	M	844	3	0.435	1.266	0.396	32.9	0.00440334	0.0384802	0.0120365
IV	M	844	4	0.452	1.245	0.384	32.0	0.00475000	0.0389062	0.0149062
IV	M	844	5	0.080	1.020	0.345	28.8	0.00277778	0.0354167	0.0419792
IV	M	842	6	0.464	1.470	0.427	34.5	0.00466667	0.0426087	0.0423768
IV	M	842	2	0.094	0.969	0.368	25.0	0.00376000	0.0387600	0.0447200
IV	M	842	3	0.430	1.069	0.359	31.7	0.00410095	0.0337224	0.0113249
IV	M	843	1	0.245	2.377	0.607	47.7	0.00450734	0.0498323	0.0427254
IV	M	843	2	0.484	2.423	0.547	45.0	0.00402222	0.0471778	0.0444889
IV	M	843	3	0.176	2.173	0.557	45.0	0.00391111	0.0482889	0.0423778
IV	M	844	1	0.438	1.435	0.307	29.3	0.00470990	0.0387372	0.0104778
IV	M	844	2	0.168	1.127	0.361	29.5	0.00569492	0.0382034	0.0422373
IV	M	844	3	0.431	1.037	0.335	28.2	0.00464539	0.0367730	0.0148794
IV	M	846	1	0.083	1.000	0.346	26.0	0.00319234	0.0384615	0.0133077
IV	M	846	2	0.094	1.357	0.419	30.4	0.00309214	0.0446382	0.0437829
IV	M	846	3	0.127	1.399	0.433	34.9	0.00398119	0.0438558	0.0435737
IV	M	846	4	0.095	1.464	0.378	29.4	0.00323129	0.0394898	0.0128571
IV	M	847	1	0.125	1.413	0.355	30.7	0.00407166	0.0460264	0.0115635
IV	M	847	2	0.159	1.144	0.324	27.9	0.00569892	0.0410036	0.0116129
IV	M	847	3	0.459	1.492	0.328	30.0	0.00530000	0.0397333	0.0109333
IV	M	847	4	0.128	1.662	0.393	33.7	0.00379822	0.0493175	0.0416617
IV	M	847	5	0.433	1.657	0.406	30.9	0.00430424	0.0536246	0.0431392
IV	M	848	1	0.150	1.839	0.608	43.4	0.00364055	0.0423733	0.0440092
IV	M	848	2	0.406	1.444	0.326	28.3	0.00374558	0.0404240	0.0145194
IV	M	848	3	0.109	0.745	0.299	24.8	0.00439516	0.0300403	0.0420565
IV	M	848	4	0.094	1.425	0.333	28.8	0.00326389	0.0390625	0.0415625
IV	M	848	5	0.103	1.039	0.323	25.1	0.00410359	0.0443944	0.0128685
IV	M	848	6	0.424	1.088	0.346	34.4	0.00394904	0.0346497	0.0410191
IV	M	849	1	0.207	1.988	0.557	42.7	0.00464778	0.0465574	0.0430445
IV	M	849	2	0.268	2.494	0.588	45.3	0.00591611	0.0484327	0.0429801
IV	M	849	3	0.278	2.366	0.632	48.5	0.00573196	0.0487835	0.0130309
IV	M	849	4	0.266	2.387	0.593	46.9	0.00567164	0.0508955	0.0426439
MEAN				0.151	1.510	0.424	34.0	0.00442	0.04380	0.01239
S.D.				0.042	0.408	0.088	6.2	0.00078	0.00536	0.00093
N				79	79	78	79	79	79	78

DO 067795
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YZ0014450

G-12
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
V	M	1026	4	0.133	0.999	0.269	26.9	0.00494424	0.0371375	0.0400000
V	M	1026	2	0.097	0.814	0.279	23.0	0.00421739	0.0353913	0.0424304
V	M	1026	3	0.096	0.942	0.331	25.1	0.00382470	0.0375299	0.0131873
V	M	1026	4	0.403	0.736	0.285	23.0	0.00447826	0.0320000	0.0423913
V	M	1027	1	0.149	2.001	0.510	44.8	0.00356459	0.0478708	0.0422010
V	M	1027	2	0.450	1.999	0.536	39.9	0.00375940	0.0501003	0.0434336
V	M	1027	3	0.149	4.667	0.480	37.9	0.00393140	0.0439842	0.0426649
V	M	1028	4	0.422	0.975	0.287	25.6	0.00476562	0.0380859	0.0412409
V	M	1028	2	0.400	0.855	0.268	22.9	0.00436681	0.0373362	0.0417034
V	M	1028	3	0.448	0.732	0.275	24.7	0.00477733	0.0296356	0.0414336
V	M	1028	4	0.138	0.855	0.328	28.3	0.00487633	0.0302120	0.0415901
V	M	1028	5	0.438	4.407	0.351	23.0	0.00600000	0.0481304	0.0452609
V	M	1028	6	0.106	0.755	0.247	20.0	0.00530000	0.0377500	0.0423500
V	M	1029	4	0.432	4.447	0.347	27.7	0.00476534	0.0414079	0.0425271
V	M	1029	2	0.443	4.479	0.316	27.9	0.00512545	0.0422581	0.0413262
V	M	1029	3	0.423	0.957	0.318	25.0	0.00492000	0.0382800	0.0127200
V	M	1029	4	0.145	1.247	0.373	28.0	0.00517857	0.0445357	0.0133214
V	M	1029	5	0.449	4.253	0.340	30.9	0.00482201	0.0405502	0.0140032
V	M	1032	4	0.444	1.278	0.357	32.9	0.00428574	0.0388450	0.0108511
V	M	1032	2	0.422	4.228	0.350	30.9	0.00394822	0.0397444	0.0413269
V	M	1032	3	0.154	4.539	0.435	36.7	0.00441444	0.0419346	0.0418529
V	M	1032	4	0.442	4.337	0.392	34.0	0.00447647	0.0393235	0.0415294
V	M	1032	5	0.126	4.288	0.353	34.5	0.00400000	0.0408889	0.0412063
V	M	1033	4	0.444	1.794	0.449	40.9	0.00352078	0.0438634	0.0109780
V	M	1033	2	0.098	1.766	0.505	36.2	0.00270718	0.0487845	0.0439503
V	M	1033	3	0.441	4.819	0.434	36.7	0.00384196	0.0495640	0.0117439
V	M	1033	4	0.148	4.745	0.446	39.9	0.00370927	0.0437343	0.0411779
V	M	1033	5	0.129	1.610	0.420	33.6	0.00383929	0.0479167	0.0125000
V	M	1034	4	0.124	4.053	0.338	34.4	0.00394904	0.0335350	0.0107643
V	M	1034	2	0.456	4.618	0.436	35.0	0.00445714	0.0462286	0.0424574
V	M	1034	3	0.129	1.580	0.444	36.7	0.00351499	0.0430518	0.0420984
V	M	1034	4	0.420	1.288	0.387	31.7	0.00378549	0.0406309	0.0122082
V	M	1035	1	0.123	1.281	0.415	32.6	0.00377301	0.0392945	0.0127304
V	M	1035	2	0.440	1.733	0.453	37.7	0.00392573	0.0459682	0.0120159
V	M	1035	3	0.120	4.628	0.446	35.7	0.00358543	0.0456022	0.0424930
V	M	1035	4	0.421	1.458	0.381	29.7	0.00407407	0.0389899	0.0128283
V	M	1035	5	0.145	4.664	0.447	47.2	0.00307203	0.0352542	0.0094703
V	M	1036	1	0.438	1.238	0.402	32.0	0.00431250	0.0386875	0.0125625
V	M	1036	2	0.134	1.302	0.445	31.9	0.00420063	0.0408150	0.0139498
V	M	1036	3	0.165	1.206	0.274	29.9	0.00551839	0.0403344	0.0125084
V	M	1036	4	0.131	4.315	0.140	29.8	0.00439597	0.0441275	0.0046980

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G-13
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
V	M	1036	5	0.115	1.132	0.407	28.9	0.00397924	0.0391696	0.0140830
V	M	1037	1	0.444	1.632	0.412	32.2	0.00437888	0.0506832	0.0127950
V	M	1037	2	0.170	2.059	0.496	39.3	0.00432570	0.0523919	0.0126209
V	M	1037	3	0.074	1.614	0.451	36.0	0.00483333	0.0447500	0.0125278
V	M	1037	4	0.184	1.444	0.398	34.7	0.00521614	0.0416138	0.0114697
V	M	1037	5	0.165	1.831	0.735	37.5	0.00440000	0.0488267	0.0196000
V	M	1038	4	0.165	1.420	0.426	31.9	0.00517241	0.0445141	0.0133542
V	M	1038	2	0.167	1.360	0.418	31.9	0.00523514	0.0426332	0.0134034
V	M	1038	3	0.136	1.322	0.398	30.2	0.00450334	0.0437748	0.0131788
V	M	1038	4	0.159	1.693	0.451	34.5	0.00460870	0.0490725	0.0130725
V	M	1038	5	0.186	1.536	0.439	36.1	0.00515235	0.0425485	0.0121607
V	M	1039	1	0.196	1.399	0.317	36.0	0.00544444	0.0388614	0.0088056
V	M	1039	2	0.156	1.543	0.431	37.9	0.00411609	0.0407424	0.0143720
V	M	1039	3	0.431	1.074	0.363	33.2	0.00394578	0.0323494	0.0109337
V	M	1039	4	0.439	1.252	0.364	34.3	0.00444089	0.0400000	0.0116294
V	M	1040	4	0.220	1.854	0.503	43.0	0.00514628	0.0434463	0.0146977
V	M	1040	2	0.202	1.905	0.512	44.6	0.00485577	0.0457933	0.0123077
V	M	1040	3	0.203	1.815	0.505	41.9	0.00484487	0.0433474	0.0120525
V	M	1040	4	0.482	1.674	0.485	37.1	0.00490566	0.0454213	0.0130728
V	M	1040	5	0.235	2.026	0.511	42.9	0.00547786	0.0472261	0.0149444
V	M	1042	4	0.157	1.705	0.470	38.2	0.00410995	0.0446335	0.0123037
V	M	1042	2	0.157	1.571	0.434	34.6	0.00453757	0.0454046	0.0125434
V	M	1042	3	0.159	1.313	0.397	33.8	0.00470414	0.0388462	0.0117456
V	M	1043	1	0.422	1.227	0.367	30.8	0.00396104	0.0398377	0.0149156
V	M	1043	2	0.429	1.284	0.347	30.4	0.00424342	0.0424382	0.0144445
V	M	1043	3	0.422	1.446	0.365	28.0	0.00435714	0.0398574	0.0130357
V	M	1043	4	0.127	1.262	0.399	30.8	0.00442338	0.0409740	0.0129545
V	M	1043	5	0.444	1.486	0.339	29.9	0.00374237	0.0396656	0.0143378
V	M	1044	1	0.469	1.595	0.409	35.6	0.00474719	0.0448034	0.0144888
V	M	1044	2	0.474	1.779	0.497	38.7	0.00449612	0.0459690	0.0128424
V	M	1044	3	0.439	1.313	0.398	30.3	0.00458746	0.0433333	0.0131353
V	M	1044	4	0.457	1.650	0.432	35.3	0.00444759	0.0467422	0.0122380
V	M	1044	5	0.178	1.666	0.466	36.9	0.00482385	0.0451491	0.0126287
V	M	1044	6	0.484	1.628	0.441	34.0	0.00541476	0.0478824	0.0129706
V	M	1044	7	0.153	1.138	0.393	34.6	0.00484177	0.0360427	0.0124367
V	M	1045	1	0.473	1.644	0.448	37.4	0.00466307	0.0443127	0.0120755
V	M	1045	2	0.166	1.744	0.475	37.8	0.00439153	0.0461376	0.0125661
V	M	1045	3	0.482	1.637	0.507	38.0	0.00478947	0.0430789	0.0133424
V	M	1045	4	0.470	1.653	0.476	37.0	0.00459459	0.0446757	0.0128649
V	M	1045	5	0.461	1.542	0.467	36.4	0.00445983	0.0427147	0.0129363
V	M	1046	4	0.148	1.087	0.366	27.9	0.00530466	0.0389606	0.0131183
V	M	1046	2	0.454	1.446	0.393	29.9	0.00505047	0.0383278	0.0131438

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G-14
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	TESTES (g)	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	T/BW	L/BW	K/BW
V	M	4046	3	0.144	4.429	0.394	30.9	0.00466019	0.0385372	0.0427508
V	M	4046	4	0.143	4.066	0.388	29.3	0.00488055	0.0363823	0.0132423
V	M	4046	5	0.138	0.953	0.328	29.6	0.00466216	0.0321959	0.0410814
V	M	4048	4	0.257	4.902	0.570	42.0	0.00614905	0.0452857	0.0135744
V	M	4048	2	0.155	4.880	0.548	42.7	0.00362998	0.0440284	0.0128337
V	M	4048	3	0.224	4.625	0.536	45.5	0.00485744	0.0357143	0.0447802
V	M	1049	4	0.222	2.074	0.557	45.9	0.00483660	0.0451852	0.0121351
V	M	1049	2	0.202	2.059	0.546	41.4	0.00491484	0.0500973	0.0132847
V	M	1049	3	0.194	2.102	0.598	43.0	0.00444186	0.0488837	0.0439070
V	M	1049	4	0.487	2.142	0.555	42.8	0.00436916	0.0500467	0.0129673
V	M	1049	5	0.197	4.902	0.533	45.2	0.00435844	0.0420796	0.0417920
V	M	1049	6	0.473	2.039	0.529	42.8	0.00404206	0.0476402	0.0123598
V	M	4050	4	0.454	4.405	0.443	35.6	0.00424157	0.0394663	0.0424438
V	M	1050	2	0.158	4.495	0.436	37.0	0.00427027	0.0404054	0.0417838
V	M	1050	3	0.149	1.294	0.391	31.7	0.00470032	0.0408202	0.0123344
V	M	1050	4	0.444	4.642	0.452	37.0	0.00389189	0.0435676	0.0422162
V	M	4050	5	0.406	1.367	0.416	32.5	0.00326154	0.0420615	0.0428000
V	M	1050	6	0.155	4.512	0.453	35.4	0.00437853	0.0427419	0.0427966
MEAN				0.151	1.453	0.419	34.1	0.00446	0.04216	0.01229
S.D.				0.031	0.347	0.086	5.7	0.00060	0.00470	0.00142
N				101	101	101	101	101	101	101

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G-15
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
I	F	225	2	1.814	0.361	38.8	0.0464844	0.0105218
I	F	226	4	1.423	0.467	37.5	0.0488232	0.0123219
I	F	227	6	1.778	0.230	35.2	0.0446588	0.0130483
I	F	228	6	1.086	0.814	37.5	0.0143400	0.0138280
I	F	229	2	1.427	0.432	32.1	0.0446583	0.0124788
I	F	230	7	1.283	0.401	32.2	0.0245582	0.0113898
I	F	231	8	1.395	0.382	32.4	0.0430884	0.0118427
I	F	232	5	1.486	0.407	36.5	0.0406911	0.0113288
I	F	233	10	1.430	0.379	34.0	0.0428688	0.0111471
I	F	234	8	1.707	0.415	37.1	0.0460108	0.0118328
I	F	235	7	1.958	0.429	43.1	0.0412436	0.0111364
I	F	236	2	1.914	0.482	37.5	0.0202012	0.0127177
I	F	237	5	1.484	0.402	32.7	0.0407843	0.0113448
I	F	238	10	1.986	0.451	37.1	0.0502982	0.0129881
I	F	239	6	1.637	0.359	34.2	0.0478482	0.0103161
I	F	240	6	2.333	0.284	42.5	0.0428980	0.0118418
I	F	241	7	1.848	0.414	38.8	0.0210563	0.0115437
I	F	242	6	2.363	0.467	40.6	0.0241772	0.0118828
I	F	243	9	1.820	0.362	31.2	0.0468714	0.0114921
I	F	244	10	2.004	0.448	36.2	0.0223981	0.0121947
I	F	245	6	1.469	0.442	33.8	0.0435821	0.0132834
I	F	246	7	1.517	0.463	32.6	0.0466337	0.0142828
I	F	247	2	0.727	0.323	22.5	0.0221632	0.0128880
I	F	248	5	1.802	0.522	37.2	0.0424406	0.0141638
I	F	249	10	1.365	0.372	31.5	0.0434148	0.0116628
I	F	250	7	1.715	0.477	36.8	0.0477890	0.0132880
I	F	251	6	1.625	0.471	34.5	0.0463484	0.0134657
I	F	252	5	1.471	0.421	34.2	0.0428142	0.0130017
I	F	253	10	1.983	0.487	36.2	0.0208847	0.0124238
I	F	254	6	1.627	0.435	36.2	0.0422424	0.0116893
I	F	255	7	1.746	0.478	32.3	0.0208283	0.0135411
I	F	256	2	1.785	0.358	35.2	0.0446726	0.0108788
I	F	257	5	2.128	0.218	48.5	0.0235340	0.0128271
I	F	258	10	1.832	0.458	32.4	0.0477882	0.0115792
I	F	259	2	1.947	0.478	40.0	0.0422780	0.0114788
I	F	260	7	1.785	0.441	36.4	0.0468141	0.0116837
I	F	261	2	1.423	0.324	32.5	0.0212234	0.0048718
I	F	262	5	1.871	0.464	37.0	0.0205676	0.0128408
I	F	263	10	2.174	0.237	41.5	0.0218884	0.0128182
I	F	264	7	2.386	0.409	44.2	0.0230112	0.0136884
I	F	265	2	2.254	0.247	43.2	0.021816	0.0149185
I	F	266	6	2.188	0.243	41.8	0.0222610	0.0132439
I	F	267	10	2.042	0.440	44.3	0.0428483	0.0118486
I	F	268	2	1.437	0.437	34.7	0.0414121	0.0128537
I	F	269	2	1.161	0.358	36.3	0.0212238	0.0147438
I	F	270	7	1.361	0.431	36.2	0.0278967	0.0119061
I	F	271	2	1.216	0.321	28.4	0.0431680	0.0127113
I	F	272	2	1.784	0.478	36.7	0.0437028	0.0129788
I	F	273	7	1.137	0.232	43.8	0.0202428	0.0128482
I	F	274	8	1.570	0.420	38.0	0.0428871	0.0128088
I	F	275	5	1.565	0.222	41.7	0.0412887	0.0138511
I	F	276	7	1.828	0.416	33.6	0.0422788	0.0123810
I	F	277	2	1.724	0.421	34.2	0.0425711	0.0124888
I	F	278	9	1.564	0.378	32.0	0.0418088	0.0118128
I	F	279	10	1.434	0.371	25.8	0.0411282	0.0124487

DO 067799
CONFIDENTIAL

YZ0014454

G-16
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
I	F	239	7	1.692	0.442	41.9	0.0404773	0.0130078
I	F	239	8	1.938	0.450	40.3	0.0480652	0.0111888
I	F	239	6	1.916	0.222	36.7	0.0222071	0.0143049
I	F	239	10	1.932	0.463	37.9	0.0510026	0.0122169
I	F	240	6	1.677	0.422	38.6	0.0431894	0.0110073
I	F	240	7	1.636	0.267	32.4	0.0442227	0.0122431
I	F	240	6	1.480	0.414	33.7	0.0436169	0.0122049
I	F	240	9	1.787	0.419	33.8	0.0518255	0.0123399
I	F	240	10	1.977	0.422	41.6	0.0471830	0.0126016
I	F	242	6	2.007	0.452	38.1	0.0526772	0.0129134
I	F	242	7	1.615	0.226	32.6	0.0461870	0.0142547
I	F	242	6	1.283	0.250	31.6	0.0340095	0.0123418
I	F	242	5	2.026	0.410	37.1	0.0540222	0.0137466
I	F	242	10	1.454	0.469	24.3	0.0422967	0.0138949
I	F	243	6	1.663	0.428	38.5	0.0437886	0.0116086
I	F	243	7	1.642	0.420	36.4	0.0502219	0.0122951
I	F	243	2	1.617	0.440	24.2	0.0462156	0.0113402
I	F	243	6	1.907	0.444	37.7	0.0500936	0.0117772
I	F	243	10	1.646	0.421	36.2	0.0444098	0.0119061
I	F	244	8	1.024	0.225	24.4	0.0422770	0.0118443
I	F	244	6	0.664	0.164	16.4	0.0343902	0.0106080
I	F	244	7	0.890	0.241	21.2	0.0272893	0.0112093
I	F	246	2	1.978	0.452	42.0	0.0476136	0.0117487
I	F	247	6	1.427	0.287	31.5	0.0486740	0.0121317
I	F	247	6	1.244	0.347	32.1	0.0327839	0.0108100
I	F	247	7	1.197	0.336	20.9	0.0275344	0.0110166
I	F	247	2	1.622	0.422	34.2	0.0482796	0.0124781
I	F	247	6	1.223	0.227	27.5	0.0436381	0.0127687
I	F	247	10	1.368	0.406	30.2	0.0443182	0.0131210
I	F	246	6	1.488	0.212	21.0	0.0460800	0.0122591
I	F	246	7	1.247	0.232	26.7	0.0434462	0.0118479
I	F	246	6	2.016	0.470	27.4	0.0536927	0.0127597
I	F	246	6	1.387	0.252	31.2	0.0434636	0.0124603
I	F	249	10	1.962	0.488	27.0	0.0531381	0.0122573
I	F	250	6	2.326	0.606	45.0	0.0466939	0.0124682
I	F	250	7	1.971	0.420	35.6	0.0467727	0.0121212
I	F	250	4	1.928	0.476	42.0	0.0422140	0.0104284
I	F	250	9	2.138	0.555	48.7	0.0447177	0.0122310
I	F	250	10	1.667	0.206	46.7	0.0404665	0.0106044
MEAN				1.690	0.444	36.3	0.04626	0.01223
S.D.				0.355	0.075	5.2	0.00546	0.00103
N				94	94	94	94	94

DO 067800
CONFIDENTIAL

YZ0014455

G-17
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BH	K/BW
11	F	425	6	1.626	0.466	36.1	0.0450416	0.0149106
11	F	425	7	1.631	0.433	36.2	0.0473677	0.0126468
11	F	425	8	1.586	0.446	32.8	0.0476388	0.0137831
11	F	425	9	0.618	0.423	31.1	0.0476088	0.0137607
11	F	425	10	1.245	0.369	31.2	0.0251009	0.0116497
11	F	426	4	1.986	0.503	38.4	0.0217784	0.0136600
11	F	426	5	1.782	0.416	37.7	0.0444507	0.0116345
11	F	426	6	2.116	0.475	35.5	0.0230322	0.0120065
11	F	426	7	1.864	0.451	35.7	0.0427726	0.0102708
11	F	426	8	1.806	0.425	37.6	0.0427552	0.0115444
11	F	426	9	2.265	0.555	42.4	0.0234198	0.0130896
11	F	426	10	2.163	0.450	35.2	0.0211784	0.0125000
11	F	426	11	1.947	0.421	43.0	0.0422761	0.0111860
11	F	426	12	1.828	0.454	42.8	0.0437322	0.0109778
11	F	428	8	2.374	0.287	47.3	0.0201902	0.0107188
11	F	428	9	2.062	0.422	40.5	0.0202523	0.0115318
11	F	428	10	2.022	0.222	48.7	0.0428808	0.0114480
11	F	429	6	1.787	0.484	38.6	0.0421181	0.0120200
11	F	429	7	1.988	0.493	41.0	0.0445988	0.0118810
11	F	429	8	1.840	0.476	36.7	0.0201302	0.0109700
11	F	429	9	1.728	0.203	37.0	0.0427827	0.0138446
11	F	429	10	1.875	0.256	35.7	0.0471822	0.0100000
11	F	431	6	1.409	0.481	34.0	0.0414412	0.0135588
11	F	431	7	1.251	0.437	34.0	0.0276706	0.0125220
11	F	431	8	1.180	0.377	30.0	0.0366667	0.0126647
11	F	431	9	1.498	0.461	34.0	0.0422238	0.0125000
11	F	431	10	1.327	0.450	32.8	0.0423866	0.0137108
11	F	432	6	1.393	0.401	30.4	0.0448224	0.0131508
11	F	432	7	1.200	0.322	30.5	0.0234350	0.0123448
11	F	432	8	1.098	0.378	31.2	0.0222244	0.0121104
11	F	432	9	1.206	0.375	35.0	0.0418662	0.0130600
11	F	432	10	1.089	0.260	28.2	0.0406342	0.0134328
11	F	433	6	1.865	0.405	33.4	0.0425750	0.0127485
11	F	433	7	1.867	0.346	38.0	0.0226084	0.0051053
11	F	433	8	1.185	0.346	38.5	0.0273782	0.0111674
11	F	433	9	1.202	0.367	32.0	0.0288408	0.0111212
11	F	433	10	1.642	0.414	34.2	0.0460117	0.0121003
11	F	434	7	1.487	0.352	32.0	0.0431598	0.0107478
11	F	434	8	1.375	0.459	33.5	0.0408808	0.0130308
11	F	434	9	1.628	0.430	36.4	0.0421887	0.0121465
11	F	434	10	1.713	0.403	32.6	0.0422833	0.0111014
11	F	435	4	0.988	0.321	27.6	0.0247101	0.0114394
11	F	435	5	0.206	0.362	28.1	0.0265438	0.0124598
11	F	435	6	1.377	0.367	28.6	0.0416641	0.0117629
11	F	435	7	1.433	0.389	31.8	0.0414981	0.0123692
11	F	435	8	1.446	0.423	23.2	0.0423462	0.0138877
11	F	435	9	1.388		23.6	0.0413808	
11	F	435	10	1.445	0.484	34.2	0.0422812	0.0110120
11	F	436	5	1.067	0.388	41.4	0.0476382	0.0148697
11	F	436	6	1.840	0.238	35.2	0.0402102	0.0136132
11	F	436	7	1.842	0.452	35.7	0.0478828	0.0123789
11	F	436	8	1.455	0.468	36.3	0.0482044	0.0120375
11	F	436	9	1.727	0.474	34.7	0.0446281	0.0120188
11	F	438	8	2.219	0.265	44.5	0.0442806	0.0126720

DO 067801
CONFIDENTIAL

YZ0014456

G-18
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
11	F	432	6	1.248	0.222	40.0	0.026200	0.013478
11	F	432	10	1.491	0.442	38.5	0.041103	0.012050
11	F	439	2	1.472	0.422	32.0	0.044128	0.013462
11	F	439	7	1.377	0.422	31.2	0.044134	0.013410
11	F	439	6	1.536	0.422	33.0	0.044234	0.013464
11	F	439	5	1.622	0.482	35.0	0.047343	0.013000
11	F	440	2	1.544	0.352	34.0	0.044112	0.013410
11	F	440	7	1.462	0.432	36.0	0.044432	0.012210
11	F	440	2	1.512	0.432	31.7	0.047142	0.013417
11	F	440	5	1.712	0.412	33.1	0.051422	0.012278
11	F	440	10	1.740	0.432	34.7	0.044314	0.012442
11	F	441	2	1.215	0.231	27.0	0.044121	0.012034
11	F	441	7	0.947	0.227	31.2	0.043404	0.012247
11	F	441	2	1.221	0.347	30.0	0.046700	0.011667
11	F	441	5	1.020	0.202	28.0	0.043200	0.012220
11	F	441	10	1.512	0.402	30.5	0.046012	0.012477
11	F	442	2	1.042	0.472	32.5	0.047222	0.012313
11	F	442	5	1.742	0.422	32.3	0.044012	0.012412
11	F	442	10	1.821	0.422	30.5	0.043223	0.012278
11	F	442	2	1.012	0.332	28.0	0.035300	0.012713
11	F	442	2	1.024	0.322	22.1	0.041622	0.012123
11	F	442	7	1.021	0.322	22.2	0.024604	0.012247
11	F	442	2	1.022	0.342	22.3	0.042212	0.012112
11	F	442	5	0.981	0.342	28.0	0.024200	0.012000
11	F	442	10	1.122	0.322	26.1	0.043127	0.012222
11	F	444	7	1.027	0.212	31.4	0.047004	0.014433
11	F	445	2	1.521	0.222	42.7	0.032720	0.012024
11	F	445	7	2.142	0.222	43.0	0.045227	0.012122
11	F	445	2	1.620	0.422	32.2	0.044272	0.011920
11	F	445	5	2.027	0.227	42.2	0.044222	0.012400
11	F	445	10	1.672	0.422	37.2	0.042222	0.012122
11	F	447	7	1.922	0.222	42.0	0.042212	0.012472
11	F	447	2	1.722	0.422	40.0	0.042220	0.012120
11	F	447	5	1.677	0.472	32.4	0.047272	0.012212
11	F	447	10	2.044	0.272	42.6	0.042222	0.012212
11	F	448	2	1.227	0.272	30.4	0.042212	0.012112
11	F	448	5	1.260	0.304	21.2	0.042212	0.012022
11	F	450	7	2.322	0.227	45.4	0.042222	0.012022
11	F	450	2	2.122	0.222	45.0	0.042222	0.012022
11	F	450	5	1.822	0.222	43.2	0.042222	0.012022
11	F	450	10	2.641	0.227	45.2	0.042222	0.012022
MEAN				1.587	0.444	35.5	0.04430	0.01256
S.D				0.403	0.075	5.9	0.00674	0.00095
N				95	94	95	95	94

DO 067802
CONFIDENTIAL

YZ0014457

G-19
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
111	F	620	3	0.669	0.219	13.0	0.0514618	0.0168462
111	F	620	4	0.673	0.213	13.0	0.0525846	0.0161364
111	F	624	6	1.066	0.688	40.2	0.0494030	0.0137313
111	F	626	7	2.392	0.443	42.0	0.0248024	0.0147477
111	F	626	8	1.863	0.610	37.3	0.0504824	0.0131274
111	F	626	5	1.970	0.693	41.0	0.0480408	0.0142198
111	F	626	10	2.364	0.672	40.2	0.0478512	0.0133868
111	F	627	7	1.063	0.238	26.6	0.0399107	0.0126651
111	F	627	8	1.220	0.221	26.1	0.0467433	0.0122109
111	F	627	9	1.088	0.226	25.4	0.0418384	0.0092513
111	F	627	10	1.241	0.227	27.0	0.0459430	0.0121111
111	F	628	6	0.838	0.256	22.2	0.0255514	0.0127804
111	F	628	7	0.980	0.322	26.0	0.0376000	0.0124000
111	F	628	8	1.294	0.354	31.0	0.0418744	0.012807
111	F	628	9	1.113	0.340	26.2	0.0413266	0.0126666
111	F	628	10	1.086	0.327	28.4	0.0404404	0.0126898
111	F	630	4	0.655	0.201	22.2	0.0272844	0.0132318
111	F	630	6	1.014	0.322	26.4	0.0366091	0.0123106
111	F	631	4	2.147	0.710	40.0	0.0426400	0.0142000
111	F	631	5	2.027	0.480	39.0	0.0413000	0.0130000
111	F	632	6	1.733	0.465	32.7	0.0428434	0.0135284
111	F	632	7	1.646	0.458	37.0	0.0422674	0.0133784
111	F	632	8	2.162	0.632	35.7	0.0456222	0.0135818
111	F	632	9	2.029	0.620	35.3	0.0218207	0.0134000
111	F	632	10	1.950	0.425	32.6	0.0413000	0.0111140
111	F	632	8	2.003	0.468	41.6	0.0478043	0.0118782
111	F	632	6	1.876	0.412	42.0	0.0447143	0.0102087
111	F	633	7	2.085	0.431	41.0	0.0406512	0.0125786
111	F	633	6	2.037	0.458	40.1	0.0417928	0.0123401
111	F	633	9	2.124	0.462	41.0	0.0418046	0.0120244
111	F	633	10	1.940	0.462	39.0	0.0422725	0.0122632
111	F	634	6	1.974	0.484	40.6	0.0422441	0.0147377
111	F	634	7	2.080	0.522	44.4	0.0421712	0.0120498
111	F	634	8	1.760	0.463	40.8	0.0424662	0.0114321
111	F	634	9	1.878	0.486	41.0	0.0427317	0.0123502
111	F	634	10	1.815	0.480	41.0	0.0432292	0.0117840
111	F	635	6	1.798	0.602	40.2	0.0425581	0.0123776
111	F	635	7	1.944	0.652	41.7	0.0470603	0.0133413
111	F	635	8	2.072	0.637	44.0	0.0470905	0.0122640
111	F	635	9	1.835	0.482	40.0	0.0428230	0.0113780
111	F	635	10	1.876	0.481	37.9	0.0412831	0.0110597
111	F	636	4	2.406	0.658	32.2	0.0426820	0.0133142
111	F	636	8	2.702	0.719	36.7	0.0475043	0.0126008
111	F	637	6	1.862	0.604	39.1	0.0421330	0.0120460
111	F	637	7	1.827	0.441	34.8	0.0414946	0.0110237
111	F	637	8	1.640	0.476	38.6	0.0446888	0.0132161
111	F	637	9	1.991	0.426	36.1	0.0406180	0.0124207
111	F	637	10	1.427	0.422	32.8	0.0404786	0.0138141
111	F	638	6	1.983	0.620	37.6	0.0422988	0.0135002
111	F	639	7	2.163	0.638	41.1	0.0426277	0.0138176
111	F	639	8	1.784	0.510	40.7	0.0423418	0.0126997
111	F	639	9	1.845	0.632	36.3	0.0445442	0.0136132
111	F	639	10	2.122	0.643	40.6	0.0427432	0.0146096
111	F	640	6	1.835	0.470	37.6	0.0414186	0.0114011
111	F	640	7	1.790	0.491	26.8	0.0423168	0.0124204

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G-20
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
111	F	640	8	1.066	0.460	35.0	0.0478462	0.0123077
111	F	640	9	1.086	0.500	38.7	0.0467339	0.0125109
111	F	640	10	1.278	0.437	33.7	0.0278339	0.0126674
111	F	641	7	1.146	0.379	25.8	0.0351044	0.0127181
111	F	641	8	1.424	0.418	31.7	0.0418043	0.0131881
111	F	641	8	1.062	0.356	26.0	0.0408462	0.0136523
111	F	641	10	1.363	0.386	26.2	0.0464444	0.0138847
111	F	642	4	2.000	0.620	43.8	0.0457770	0.0121379
111	F	642	6	2.038	0.530	41.2	0.0463932	0.0126214
111	F	642	6	1.988	0.562	42.6	0.0457770	0.0131308
111	F	642	7	2.124	0.576	44.2	0.0476882	0.0125421
111	F	642	8	2.062	0.542	41.6	0.0493641	0.0125688
111	F	642	9	2.064	0.464	39.6	0.0418442	0.0123718
111	F	643	6	1.729	0.464	31.6	0.0463244	0.0128042
111	F	643	7	1.888	0.551	38.6	0.0478644	0.0131468
111	F	643	8	1.868	0.276	40.1	0.0433317	0.0143641
111	F	643	9	1.998	0.238	34.6	0.0513628	0.0134247
111	F	643	10	1.720	0.478	38.6	0.0470105	0.0130619
111	F	644	6	1.446	0.406	34.3	0.0475465	0.0128670
111	F	644	7	1.672	0.410	37.1	0.0460443	0.0121294
111	F	644	8	1.517	0.472	35.0	0.0432426	0.0138163
111	F	644	9	1.346	0.276	31.6	0.0421944	0.0131630
111	F	645	6	1.724	0.453	38.6	0.0423465	0.0133804
111	F	645	6	1.076	0.462	39.5	0.0467405	0.0137047
111	F	645	7	1.166	0.246	41.7	0.0346771	0.0136130
111	F	645	8	1.943	0.243	39.6	0.0482151	0.0136432
111	F	645	9	1.725	0.462	37.3	0.0478265	0.0131603
111	F	646	10	1.182	0.402	31.2	0.0377988	0.0136301
111	F	646	6	1.684	0.434	38.2	0.0461231	0.0116437
111	F	646	7	1.727	0.452	29.0	0.0462208	0.0126023
111	F	646	8	1.735	0.466	36.2	0.0464186	0.0136622
111	F	646	9	1.626	0.482	37.9	0.0458818	0.0116261
111	F	646	10	1.751	0.451	36.9	0.0474226	0.0133962
111	F	647	6	1.884	0.396	32.1	0.0493488	0.0123086
111	F	647	7	1.989	0.464	32.0	0.0523421	0.0127362
111	F	647	8	1.785	0.487	34.6	0.0518094	0.0117630
111	F	647	9	2.014	0.246	37.7	0.0524212	0.0144622
111	F	647	10	1.842	0.488	33.8	0.0549881	0.0134328
111	F	648	4	2.778	0.258	82.2	0.0346136	0.0122127
111	F	648	6	2.416	0.282	44.2	0.0541704	0.0130403
111	F	648	6	2.706	0.281	47.1	0.0574822	0.0144886
111	F	648	7	2.427	0.223	42.8	0.0543711	0.0134468
111	F	648	8	2.588	0.226	48.3	0.0548288	0.0143095
111	F	648	9	2.341	0.274	44.0	0.0538045	0.0130486
111	F	649	7	2.006	0.238	39.6	0.0507323	0.0138101
111	F	649	8	2.427	0.247	43.7	0.0563372	0.0148088
111	F	649	9	1.839	0.464	38.7	0.0478194	0.0117313
111	F	649	10	1.488	0.478	32.6	0.0468886	0.0127371
111	F	650	6	2.001	0.492	40.6	0.0459441	0.0126233
111	F	650	7	1.848	0.441	36.2	0.0508284	0.0131488
111	F	650	8	2.041	0.216	40.8	0.0543581	0.0125677
111	F	650	9	1.840	0.408	34.6	0.0448887	0.0117419
111	F	650	10	1.976	0.487	38.6	0.0525891	0.0138702
MEAN				1.783	0.488	37.7	0.04700	0.0129511
S.D.				0.431	0.102	7.1	0.00492	0.00103
N				108	108	108	108	108

DO 067804
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YZ0014459

G-21
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
IV	F	828	2	1.952	0.483	34.3	0.0448728	0.0133688
IV	F	828	6	1.806	0.418	32.6	0.0461963	0.0127391
IV	F	828	7	1.466	0.413	32.2	0.0460686	0.0138410
IV	F	828	8	1.341	0.419	29.2	0.0482479	0.0142492
IV	F	828	6	1.706	0.447	33.1	0.0438314	0.0138648
IV	F	828	10	1.828	0.441	36.5	0.0464880	0.0146612
IV	F	826	4	1.663	0.478	34.0	0.0461644	0.0132772
IV	F	826	6	1.674	0.414	40.6	0.0413227	0.0126516
IV	F	826	6	2.441	0.562	41.8	0.0288193	0.0138422
IV	F	826	7	1.888	0.471	37.0	0.0487027	0.0127397
IV	F	826	2	1.806	0.412	31.2	0.0482652	0.0132051
IV	F	826	6	1.837	0.454	34.9	0.0422490	0.0141547
IV	F	826	10	1.931	0.473	40.7	0.0414447	0.0140704
IV	F	827	6	1.934	0.423	35.6	0.0457172	0.0132023
IV	F	827	7	1.432	0.380	31.2	0.0460314	0.0116063
IV	F	827	8	1.756	0.460	40.2	0.0440688	0.0114144
IV	F	827	6	1.427	0.413	34.8	0.0418217	0.0115710
IV	F	827	10	1.832	0.441	39.4	0.0462437	0.0111020
IV	F	822	4	1.037	0.422	33.4	0.0311704	0.0136283
IV	F	828	6	1.392	0.407	30.6	0.0464502	0.0132007
IV	F	828	6	1.570	0.407	32.4	0.0464568	0.0122619
IV	F	828	7	1.373	0.382	21.6	0.0438488	0.0121620
IV	F	828	2	1.110	0.320	26.8	0.0318683	0.0116644
IV	F	828	6	1.646	0.434	36.6	0.0418456	0.0148661
IV	F	828	10	1.497	0.424	33.1	0.0412242	0.0132271
IV	F	830	4	1.908	0.452	42.6	0.0461028	0.0138490
IV	F	830	6	1.688	0.424	36.0	0.0464683	0.0143421
IV	F	830	6	1.721	0.425	35.8	0.0438222	0.0144051
IV	F	830	7	2.096	0.468	44.2	0.0474262	0.0150482
IV	F	830	6	1.646	0.437	46.6	0.0405442	0.0131296
IV	F	830	6	1.984	0.446	43.8	0.0437781	0.0132232
IV	F	831	7	1.646	0.461	32.6	0.0260384	0.0140122
IV	F	831	9	4.727	0.406	26.4	0.0661636	0.0155556
IV	F	831	10	4.333	0.324	33.4	0.0402719	0.0097835
IV	F	835	6	4.582	0.460	33.2	0.0476506	0.0138554
IV	F	835	7	4.536	0.450	31.8	0.0483019	0.0141509
IV	F	835	8	4.790	0.425	34.0	0.0577419	0.0137097
IV	F	835	9	1.626	0.430	31.7	0.0512934	0.0135647
IV	F	835	10	4.324	0.369	28.7	0.0461324	0.0128571
IV	F	837	3	2.233	0.570	41.6	0.0536779	0.0137019
IV	F	837	4	2.294	0.583	41.0	0.0559542	0.0142195
IV	F	837	5	4.833	0.512	39.7	0.0497855	0.0132300
IV	F	837	6	2.153	0.588	41.7	0.0517506	0.0141007
IV	F	838	6	1.499	0.431	32.4	0.0466973	0.0134263
IV	F	838	7	4.813	0.509	31.0	0.0534539	0.0164194
IV	F	838	9	1.964	0.575	41.0	0.0479024	0.0140244
IV	F	838	9	4.451	0.395	36.2	0.0400329	0.0109116
IV	F	838	10	1.932	0.536	35.9	0.0496658	0.0137789
IV	F	839	6	4.416	0.443	31.9	0.0443387	0.0135371
IV	F	839	7	1.350	0.377	31.5	0.0423574	0.0119693
IV	F	839	9	4.270	0.391	31.2	0.0407051	0.0122145
IV	F	839	9	1.301	0.412	30.7	0.0423779	0.0134202
IV	F	839	10	4.169	0.357	27.9	0.0415996	0.0135710
IV	F	840	6	1.209	0.371	27.5	0.0439273	0.0134909

DO 067805
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G-22

Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
IV	F	240	7	1.388	0.378	26.8	0.0440919	0.0124889
IV	F	240	8	0.920	0.221	22.8	0.0407486	0.0146789
IV	F	240	9	1.118	0.287	25.8	0.0434715	0.0135483
IV	F	240	10	1.221	0.355	27.2	0.0440897	0.0148221
IV	F	241	2	1.162	0.381	28.8	0.0415387	0.0128357
IV	F	241	7	1.236	0.278	30.3	0.0407921	0.0090759
IV	F	241	8	1.337	0.387	32.8	0.0417813	0.0124662
IV	F	241	5	1.131	0.348	28.4	0.0388239	0.0121476
IV	F	241	10	1.103	0.373	28.7	0.0384321	0.0120068
IV	F	242	4	1.882	0.530	40.1	0.0469976	0.0138170
IV	F	242	5	1.218	0.412	31.8	0.0353222	0.0132983
IV	F	242	6	1.662	0.458	32.5	0.0450268	0.0135103
IV	F	242	7	1.080	0.347	26.8	0.0416647	0.0144883
IV	F	242	8	1.095	0.464	34.5	0.0486673	0.0132981
IV	F	242	5	0.838	0.374	28.8	0.0315688	0.0137888
IV	F	242	10	1.340	0.488	30.8	0.0438062	0.0148701
IV	F	243	4	2.044	0.289	41.2	0.046117	0.0123343
IV	F	243	5	1.951	0.280	42.2	0.0459187	0.0121498
IV	F	243	6	2.018	0.292	41.2	0.0422778	0.0121227
IV	F	244	4	1.203	0.278	28.6	0.0444475	0.0148546
IV	F	244	5	1.166	0.366	30.8	0.0383278	0.0126236
IV	F	244	6	1.343	0.276	28.6	0.0444768	0.0138104
IV	F	244	7	1.861	0.434	32.2	0.0461277	0.0134783
IV	F	244	8	1.154	0.343	29.3	0.0401289	0.0117068
IV	F	244	9	1.372	0.433	30.2	0.0474803	0.0148884
IV	F	244	10	1.602	0.430	32.5	0.0466338	0.0136006
IV	F	246	2	1.830	0.442	32.7	0.0447898	0.0132686
IV	F	246	6	1.297	0.374	28.2	0.0480347	0.0126061
IV	F	246	7	1.215	0.380	28.0	0.0468246	0.0146184
IV	F	246	8	1.888	0.221	34.3	0.0462055	0.0181098
IV	F	246	9	1.802	0.442	32.7	0.0426238	0.0127238
IV	F	247	6	1.628	0.430	32.5	0.0386076	0.0120491
IV	F	247	7	1.484	0.424	31.5	0.0404426	0.0132516
IV	F	247	8	1.385	0.361	29.3	0.0446823	0.0136034
IV	F	247	5	1.572	0.396	32.7	0.0420734	0.0121191
IV	F	247	10	1.857	0.428	30.7	0.0420198	0.0138436
IV	F	248	7	1.390	0.423	27.3	0.0332584	0.0121408
IV	F	248	8	1.417	0.461	32.3	0.0481412	0.0136898
IV	F	248	5	1.381	0.388	28.2	0.0451937	0.0117776
IV	F	248	10	1.280	0.339	28.6	0.0434024	0.0117708
IV	F	249	2	2.168	0.622	48.2	0.0470224	0.0143297
IV	F	249	6	1.866	0.258	46.7	0.0468477	0.0136364
IV	F	249	7	2.167	0.626	44.8	0.0468566	0.0149663
MEAN				1.560	0.450	33.8	0.04601	0.01330 ††
S.D.				0.326	0.094	5.3	0.00507	0.00115
N				98	98	98	98	98

DO 067806
CONFIDENTIAL

YZ0014461

G-23
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
V	F	1026	6	0.821	0.378	22.4	0.0407522	0.0123608
V	F	1026	6	0.847	0.381	22.8	0.0369426	0.0129088
V	F	1026	7	1.203	0.398	31.5	0.0377716	0.0124768
V	F	1026	8	1.123	0.312	24.6	0.0426604	0.0126629
V	F	1026	6	0.665	0.235	19.6	0.0337870	0.0120707
V	F	1027	4	1.876	0.504	36.9	0.0288401	0.0126888
V	F	1027	2	1.434	0.433	31.5	0.0446830	0.0138737
V	F	1027	6	1.721	0.547	35.1	0.0440123	0.0135498
V	F	1027	7	1.854	0.468	31.7	0.0424888	0.0146688
V	F	1027	8	1.725	0.428	34.7	0.0467112	0.0123242
V	F	1027	5	1.822	0.452	37.8	0.0412432	0.0138772
V	F	1028	7	0.877	0.222	21.3	0.0411737	0.0122294
V	F	1028	2	0.808	0.242	24.8	0.0312171	0.0115184
V	F	1028	9	0.924	.	23.7	0.0325701	.
V	F	1029	6	1.368	0.402	30.2	0.0463311	0.0138448
V	F	1029	3	1.295	0.409	29.2	0.0412471	0.0140849
V	F	1029	2	1.232	0.324	28.6	0.0423234	0.0144361
V	F	1029	8	1.234	0.361	26.9	0.0428726	0.0124201
V	F	1030	10	1.182	0.407	38.4	0.0417462	0.0143318
V	F	1031	1	2.390	0.676	47.8	0.0163188	0.0121684
V	F	1031	2	2.624	0.608	48.0	0.0244492	0.0138438
V	F	1032	8	1.651	0.419	38.4	0.0421173	0.0117539
V	F	1032	7	1.643	0.472	38.1	0.0428861	0.0134788
V	F	1032	2	1.413	0.423	32.7	0.0433110	0.0128822
V	F	1032	6	1.233	0.340	31.8	0.0397742	0.0140277
V	F	1032	10	1.213	0.398	31.2	0.0450232	0.0120888
V	F	1033	6	1.760	0.424	38.0	0.0463162	0.0115474
V	F	1033	7	1.532	0.282	38.2	0.0431845	0.0107806
V	F	1033	2	1.628	0.364	32.0	0.0422143	0.0118871
V	F	1033	5	1.730	0.425	37.5	0.0468954	0.0123387
V	F	1033	10	1.622	0.423	36.5	0.0418027	0.0122764
V	F	1034	2	1.090	0.348	26.5	0.0408284	0.0125368
V	F	1034	6	1.276	0.376	31.5	0.0408666	0.0117888
V	F	1034	7	1.022	0.329	28.2	0.0407143	0.0130956
V	F	1034	2	1.444	0.410	34.2	0.0412222	0.0131879
V	F	1034	5	1.322	0.394	32.2	0.0414987	0.0122380
V	F	1035	2	1.288	0.352	32.8	0.0461882	0.0123427
V	F	1035	7	0.962	0.302	27.4	0.0346432	0.0118807
V	F	1035	2	1.611	0.428	32.2	0.0463120	0.0128038
V	F	1035	5	1.642	0.453	32.3	0.0468186	0.0128229
V	F	1035	10	1.302	0.402	30.5	0.0460482	0.0131382
V	F	1036	6	1.504	0.487	32.2	0.0463745	0.0145518
V	F	1036	7	1.202	0.404	30.2	0.0355332	0.0133778
V	F	1036	2	1.124	0.370	31.1	0.03261412	0.0118971
V	F	1036	5	1.472	0.462	28.8	0.0428002	0.0142172
V	F	1036	10	1.342	0.441	26.7	0.0423195	0.0148488
V	F	1037	6	1.862	0.458	34.8	0.0326710	0.0144638
V	F	1037	7	1.368	0.398	31.8	0.0429968	0.0128718
V	F	1037	2	1.868	0.642	33.4	0.0280281	0.0128216
V	F	1037	6	1.782	0.644	34.8	0.0404463	0.0122227
V	F	1037	10	1.427	0.486	32.1	0.0280884	0.0142786
V	F	1038	2	1.302	0.422	38.8	0.0434888	0.0142888
V	F	1038	7	1.545	0.412	32.8	0.0424882	0.0138888
V	F	1038	2	1.480	0.418	31.4	0.0461783	0.0132484
V	F	1038	9	1.207	0.221	27.4	0.0448811	0.0128162

DO 067807
CONFIDENTIAL

YZ0014462

G-24
Appendix G (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

GROUP	SEX	LITTER	PUP	LIVER (g)	KIDNEYS (g)	BODY WT. (g)	L/BW	K/BW
V	F	1038	10	1.837	0.426	32.7	0.0470031	0.0130278
V	F	1039	8	1.296	0.398	36.8	0.0424850	0.0129800
V	F	1039	2	0.974	0.331	28.8	0.0211461	0.0124066
V	F	1039	7	1.296	0.388	38.0	0.0408937	0.0120312
V	F	1039	2	1.336	0.377	31.8	0.0430466	0.0121613
V	F	1039	6	1.399	0.409	34.2	0.0402011	0.0117829
V	F	1039	10	1.384	0.364	33.7	0.0428008	0.0116366
V	F	1040	4	2.103	0.863	43.1	0.0501054	0.0139267
V	F	1040	7	1.818	0.660	38.3	0.0473660	0.0138548
V	F	1040	8	2.032	0.839	42.0	0.0484046	0.0128333
V	F	1040	6	1.770	0.474	37.1	0.0477666	0.0128302
V	F	1040	10	1.700	0.518	36.2	0.0428380	0.0130633
V	F	1042	4	1.553	0.505	38.6	0.0448733	0.0143284
V	F	1042	2	1.746	0.820	36.6	0.0487187	0.0144647
V	F	1042	4	1.666	0.803	34.6	0.0474212	0.0144126
V	F	1042	7	1.892	0.492	33.0	0.0482424	0.0149091
V	F	1042	2	1.687	0.627	38.2	0.0477664	0.0137700
V	F	1042	6	1.232	0.490	27.0	0.0446377	0.0137836
V	F	1042	10	1.266	0.356	31.6	0.0461682	0.0128000
V	F	1043	6	1.336	0.418	31.0	0.0430606	0.0138161
V	F	1043	7	1.217	0.474	30.1	0.0464319	0.0137140
V	F	1043	4	1.370	0.428	32.2	0.0430146	0.0132098
V	F	1044	2	1.768	0.448	38.1	0.0443564	0.0131898
V	F	1044	6	1.330	0.438	33.9	0.0422336	0.0128319
V	F	1044	10	1.328	0.416	32.6	0.0433786	0.0143437
V	F	1045	6	1.476	0.448	36.8	0.0451714	0.0128000
V	F	1045	7	1.716	0.487	36.0	0.0461876	0.0128188
V	F	1046	2	1.047	0.249	28.6	0.0368204	0.0120761
V	F	1046	7	1.136	0.382	27.6	0.0408210	0.0137453
V	F	1046	6	1.144	0.376	28.1	0.0440717	0.0133482
V	F	1046	6	1.161	0.361	27.2	0.0353889	0.0132842
V	F	1046	10	1.022	0.360	24.8	0.0414810	0.0141129
V	F	1046	4	1.866	0.263	46.6	0.0423670	0.0137653
V	F	1046	8	1.737	0.517	35.6	0.0430636	0.0130880
V	F	1049	7	1.841	0.534	28.3	0.0468276	0.0139420
V	F	1049	8	1.710	0.483	34.7	0.0468940	0.0131600
V	F	1049	6	1.623	0.483	34.8	0.0427822	0.0148899
V	F	1049	10	1.907	0.544	34.2	0.0466218	0.0142408
V	F	1050	7	1.678	0.516	28.6	0.0427485	0.0144568
V	F	1050	8	1.028	0.387	26.6	0.0400407	0.0128714
V	F	1050	6	1.741	0.520	27.0	0.0479641	0.0143243
V	F	1050	10	1.321	0.418	30.6	0.0457808	0.0124384

MEAN
S.D.
N

1.462†	0.456	32.6	0.04442	0.01333††
0.339	0.079	5.1	0.00409	0.00136
97	96	97	97	96

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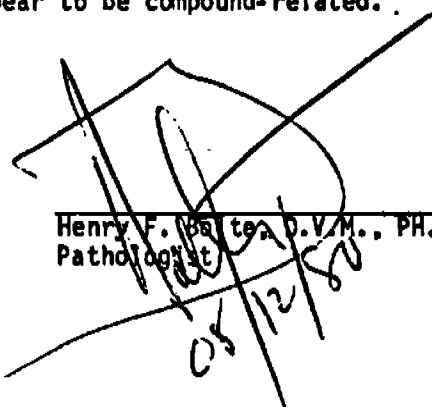
H-1
Appendix H
An Inhalation Female Fertility Study
With Benzene in Rats

79-2425

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

PREFACE

Morphologic abnormalities observed grossly in the animals from this study occurred sporadically and do not appear to be compound-related.


Henry F. Patton, D.V.M., PH.D.
Pathologist

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YZ0014464

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
I 0	225	3	F	N.O.A.
		4	F	N.O.A.
	226	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	227	2	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.
	228	3	M	N.O.A.
		4	M	N.O.A.
		5	F	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		10	F	N.O.A.
	229	2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014465

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
I(cont.) 0	230	1	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	231	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
	233	3	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
	235	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		6	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male, F = female.

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YZ0014466

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
I(cont.) 0	236	3	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
	237	2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
	238	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.
	239	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	240	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
I(cont.) 0	242	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
	243	3	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	244	3	M	N.O.A.
		4	M	N.O.A.
		5	F	N.O.A.
	246	2	M	N.O.A.
		4	M	N.O.A.
	247	2	M	N.O.A.
		3	M	N.O.A.
		5	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	249	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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YZ0014468

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
I(cont.) 0	250	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
II 1	425	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		7	F	N.O.A.
		8	F	<u>Hindlimb (Right)</u> : Compound fracture of femur.
		9	F	N.O.A.
	426	3	M	N.O.A.
		4	F	N.O.A.
		6	F	N.O.A.
		8	F	<u>Kidney (Right)</u> : pelvis moderately dilated; filled with clear fluid.
		9	F	N.O.A.
		10	F	N.O.A.
	428	2	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
II(cont.) 1	429	3	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	431	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	432	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	433	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		10	F	N.O.A.
	434	2	M	N.O.A.
		3	M	N.O.A.
		5	M	Tail: blunt.
		6	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014470

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
II(cont.) 1	435	1	M	N.O.A.
		4	F	N.O.A.
		5	F	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	436	2	M	N.O.A.
		3	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	438	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		7	M	N.O.A.
		10	F	N.O.A.
	439	2	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
	440	1	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014471

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
II(cont.) 1	441	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	442	1	M	Eye (Left): 50% opacity.
		3	M	N.O.A.
		4	M	N.O.A.
		6	M	N.O.A.
		7	M	N.O.A.
		10	F	N.O.A.
	443	2	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	444	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
	445	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

DO 067817
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YZ0014472

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
II(cont.) 1	447	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	448	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
	450	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		7	F	N.O.A.
		10	F	N.O.A.
III 10	626	2	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	627	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		6	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014473

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
III(cont.) 10	628	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	630	1	M	N.O.A.
	631	2	M	N.O.A.
	632	1	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	633	2	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	634	3	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014474

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
III(cont.) 10	635	1	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	636	2	M	<u>Kidney</u> - (Right) dilated renal pelvis (.5cm. diam.).
	637	3	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	639	2	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		10	F	N.O.A.
	640	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	641	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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YZ0014475

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
III(cont.) 10	642	2	M	N.O.A.
		4	F	N.O.A.
		5	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	643	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	644	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
	645	2	M	N.O.A.
		3	M	N.O.A.
		5	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	646	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014476

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
III(cont.) 10	647	3	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	648	3	M	N.O.A.
		4	F	N.O.A.
		5	F	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
	649	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	650	2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.
IV 30	825	1	M	N.O.A.
		3	M	N.O.A.
		5	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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YZ0014477

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
IV(cont.) 30	826	1	M	N.O.A.
		4	F	N.O.A.
		6	F	Liver: pale red-tan.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	827	2	M	N.O.A.
		3	M	Kidneys (Both): dilated renal pelvis (approx. 0.3 x 0.2 cm).
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	828	2	M	N.O.A.
		4	F	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	Kidney (Left): dilated renal pelvis (0.4 cm. in diameter).
	830	1	M	N.O.A.
		5	F	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
	831	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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YZ0014478

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
IV(cont.) 30	835	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	837	3	F	N.O.A.
		4	F	N.O.A.
	838	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	839	1	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	840	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	Liver: accessory lobe mottled dark red and brown.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014479

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> <u>ppm</u>	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
IV(cont.) 30	841	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
	842	2	M	N.O.A.
		5	F	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	843	3	M	N.O.A.
		4	F	N.O.A.
	844	1	M	N.O.A.
		4	F	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	846	2	M	N.O.A.
		4	M	N.O.A.
		5	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	847	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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YZ0014480

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
IV(cont.) 30	848	1	M	N.O.A.
		2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		10	F	N.O.A.
	849	3	M	N.O.A.
		4	M	N.O.A.
		7	F	Liver: visceral surface of accessory lobe dark red and brown.
V 300	1026	1	M	N.O.A.
		2	M	N.O.A.
		5	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	1027	1	M	N.O.A.
		4	F	N.O.A.
		5	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
	1028	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		7	F	N.O.A.
	1029	1	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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YZ0014481

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
V(cont.) 300	1032	2	M	N.O.A.
		3	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	1033	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	1034	3	M	N.O.A.
		4	M	N.O.A.
		5	F	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
	1035	3	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	1036	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	1037	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		9	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.
Key: M = male; F = female.

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YZ0014482

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^a
V(cont.) 300	1038	2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.
	1039	1	M	N.O.A.
		2	M	N.O.A.
		5	F	N.O.A.
		6	F	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
	1040	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	F	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.
	1042	1	M	N.O.A.
		4	F	N.O.A.
		5	F	N.O.A.
		6	F	N.O.A.
		7	F	Kidneys (Both): dilated renal pelvis (0.5 cm. in diameter).
		8	F	N.O.A.
	1043	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
	1044	1	M	N.O.A.
		2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		8	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

Key: M = male; F = female.

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YZ0014483

Appendix H (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Unselected)

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^a</u>
V(cont.) 300	1045	1	M	N.O.A.
		2	M	N.O.A.
		5	M	N.O.A.
	1046	2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.
		10	F	N.O.A.
	1048	2	M	N.O.A.
	1049	2	M	N.O.A.
		3	M	N.O.A.
		4	M	N.O.A.
		6	M	N.O.A.
		8	F	N.O.A.
		10	F	N.O.A.
	1050	2	M	N.O.A.
		4	M	N.O.A.
		5	M	N.O.A.
		6	M	N.O.A.
		7	F	N.O.A.
		9	F	N.O.A.

^aN.O.A. = No Observable Abnormalities.

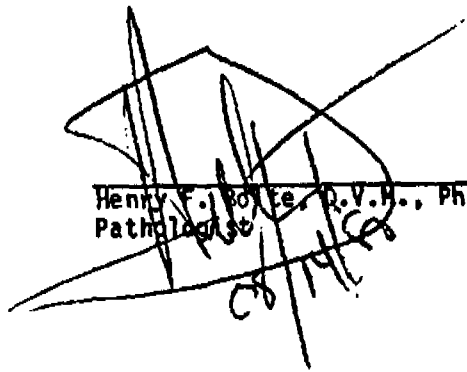
Key: M = male; F = female.

Appendix I
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)

Preface

Morphologic abnormalities observed grossly in the animals from this study occurred sporadically and do not appear to be compound-related.



Henry F. Boffe, D.V.M., Ph.D.
Pathologist

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YZ0014485

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
1 0	225	1	M	N.O.A.
		2	M	N.O.A.
	226	4	M	N.O.A.
		5	M	N.O.A.
	227	1	M	N.O.A.
		4b	M	N.O.A.
	228	1b	M	N.O.A.
		2	M	N.O.A.
	229	1	M	N.O.A.
		5	M	N.O.A.
	230	2	M	Salivary gland (Right): red. Lungs: scattered clustered red foci on all lobes.
		4	M	N.O.A.
	231	2	M	N.O.A.
		3	M	N.O.A.
	233	1	M	N.O.A.
		2	M	N.O.A.
	235	3	M	N.O.A.
		5	M	N.O.A.
	236	1	M	N.O.A.
		2	M	N.O.A.
	237	1	M	N.O.A.
		5	M	N.O.A.
	238	3	M	N.O.A.
		6	M	N.O.A.
	239	3	M	N.O.A.
		4	M	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
I (cont.) 0	240	3	M	N.O.A.
		4	M	N.O.A.
	242	3	M	N.O.A.
		5	M	N.O.A.
	243	1	M	N.O.A.
		2	M	N.O.A.
	244	1	M	N.O.A.
		2 ^b	M	N.O.A.
	246	1	M	N.O.A.
		3	M	N.O.A.
	247	1	M	N.O.A.
		4	M	N.O.A.
	249	1	M	N.O.A.
		3	M	N.O.A.
II 1	250	2	M	N.O.A.
		3	M	<u>Liver</u> : all lobes pale brown.
	425	1	M	N.O.A.
		3	M	N.O.A.
	426	1	M	N.O.A.
		2	M	N.O.A.
	428	1	M	N.O.A.
		4	M	N.O.A.
	429	1 ^b	M	N.O.A.
		2	M	N.O.A.
	431	4	M	N.O.A.
		5 ^b	M	N.O.A.
	432	3	M	N.O.A.
		5	M	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014487

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^c</u>
II(cont.) 1	433	3	M	N.O.A.
		4	M	N.O.A.
	434	1	M	N.O.A.
		4	M	N.O.A.
	435	2	M	N.O.A.
		3	M	N.O.A.
	436	1	M	N.O.A.
		4	M	N.O.A.
	438	2	M	N.O.A.
		3	M	N.O.A.
	439	1b	M	N.O.A.
		4b	M	N.O.A.
	440	2b	M	N.O.A.
		5b	M	N.O.A.
	441	1b	M	N.O.A.
		3b	M	N.O.A.
	442	2	M	N.O.A.
		5	M	N.O.A.
	443	1	M	N.O.A.
		3	M	N.O.A.
	444	5	M	N.O.A.
		6	M	N.O.A.
	445	4	M	N.O.A.
		5	M	N.O.A.
	447	5	M	N.O.A.
		6	M	N.O.A.
	448	4	M	N.O.A.
		7	M	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014488

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
II(cont.) 1	449	1	M	N.O.A.
		2	M	N.O.A.
	450	1	M	N.O.A.
		3	M	N.O.A.
III 10	625	1	M	Eye (Left) - 75% opacity
		2	M	Entire body: extremely small.
	626	1	M	N.O.A.
		4 ^b	M	N.O.A.
	627	3	M	N.O.A.
		5	M	N.O.A.
	628	2	M	N.O.A.
		3	M	N.O.A.
	630	2	M	N.O.A.
		3	M	N.O.A.
	631	1	M	N.O.A.
		3	M	N.O.A.
	632	2 ^b	M	Liver: Moderately pale red-brown.
		5 ^b	M	Liver: visceral surface, caudate and accessory lobes mottled dark red and brown.
	633	1	M	N.O.A.
		3	M	N.O.A.
	634	1	M	N.O.A.
		2	M	N.O.A.
	635	2	M	N.O.A.
		5	M	Liver: edges of left and median lobes slightly reddened.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male, F = female.

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YZ0014489

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
III(cont.) 10	636	1	M	N.O.A.
		3	M	N.O.A.
	637	1	M	N.O.A.
		2	M	N.O.A.
	639	1	M	N.O.A.
		4	M	N.O.A.
	640	2 ^b	M	N.O.A.
		3 ^b	M	N.O.A.
	641	5	M	N.O.A.
		6 ^b	M	N.O.A.
	642	1	M	N.O.A.
		3	M	N.O.A.
	643	1	M	N.O.A.
		3 ^b	M	N.O.A.
	644	2	M	N.O.A.
		3	M	N.O.A.
	645	1	M	N.O.A.
		4	M	N.O.A.
	646	3	M	N.O.A.
		4 ^b	M	N.O.A.
	647	1	M	N.O.A.
		2 ^b	M	N.O.A.
	648	1	M	N.O.A.
		2 ^b	M	N.O.A.
	649	1 ^b	M	N.O.A.
		3 ^b	M	N.O.A.
	650	1	M	N.O.A.
		5	M	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014490

Appendix 1 (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
IV 30	825	2 ^b	M	N.O.A.
		4 ^b	M	N.O.A.
	826	2	M	N.O.A.
		3	M	N.O.A.
	827	1	M	N.O.A.
		4	M	N.O.A.
	828	1 ^b	M	N.O.A.
		3	M	N.O.A.
	830	2	M	N.O.A.
		3	M	N.O.A.
	831	2	M	N.O.A.
		3	M	N.O.A.
	835	4 ^b	M	N.O.A.
		5 ^b	M	N.O.A.
	837	1	M	N.O.A.
		2	M	N.O.A.
	838	1	M	N.O.A.
		3	M	N.O.A.
	839	2	M	N.O.A.
		5	M	N.O.A.
	840	4	M	N.O.A.
		5	M	N.O.A.
	841	3	M	N.O.A.
		5	M	N.O.A.
	842	1 ^b	M	N.O.A.
		3 ^b	M	<u>Kidneys (Both):</u> pale red-brown.
	843	1 ^b	M	N.O.A.
		2 ^b	M	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014491

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
IV(cont.) 30	844	2	M	N.O.A.
		3	M	N.O.A.
	846	1 ^b	M	N.O.A.
		3 ^b	M	N.O.A.
	847	2 ^b	M	N.O.A.
		3 ^b	M	N.O.A.
	848	5	M	N.O.A.
		6	M	N.O.A.
	849	1 ^b	M	N.O.A.
		2 ^b	M	N.O.A.
V 300	1026	3	M	N.O.A.
		4	M	N.O.A.
	1027	2	M	N.O.A.
		3	M	N.O.A.
	1028	3	M	N.O.A.
		4	M	N.O.A.
	1029	2	M	N.O.A.
		3	M	N.O.A.
	1032	1	M	N.O.A.
		4	M	N.O.A.
	1033	3	M	N.O.A.
		4	M	Lungs: scattered, clustered red foci on all lobes.
	1034	1 ^b	M	N.O.A.
		2	M	N.O.A.
	1035	1	M	N.O.A.
		2	M	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014492

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
V(cont.) 300	1036	1	M	N.O.A.
		3	M	N.O.A.
	1037	3	M	N.O.A.
		4	M	N.O.A.
	1038	1	M	N.O.A.
		5	M	N.O.A.
	1039	3 ^b	M	N.O.A.
		4	M	N.O.A.
	1040	1	M	N.O.A.
		3	M	N.O.A.
	1042	2	M	N.O.A.
		3	M	N.O.A.
	1043	3	M	N.O.A.
		5	M	N.O.A.
	1044	3	M	N.O.A.
		7	M	Lungs: few scattered red foci on all lobes.
	1045	3	M	N.O.A.
		4	M	N.O.A.
	1046	1	M	N.O.A.
		5	M	N.O.A.
	1048	1	M	N.O.A.
		3	M	N.O.A.
	1049	1	M	N.O.A.
		5	M	N.O.A.
	1050	1	M	N.O.A.
		3	M	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

DO 067838
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YZ0014493

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
I 0	225	5	F	N.O.A.
		6	F	Lungs: multiple clustered red pin-point foci on right anterior lobe.
	226	7	F	N.O.A.
		10	F	N.O.A.
	227	7	F	N.O.A.
		9 ^b	F	N.O.A.
	228	8	F	N.O.A.
		9	F	N.O.A.
	229	8	F	N.O.A.
		10	F	N.O.A.
	230	9	F	N.O.A.
		10	F	N.O.A.
	231	8	F	N.O.A.
		10	F	N.O.A.
	233	8 ⁱ	F	N.O.A.
		10	F	N.O.A.
	235	7	F	N.O.A.
		10	F	N.O.A.
	236	5	F	N.O.A.
		7	F	N.O.A.
	237	7	F	N.O.A.
		8	F	N.O.A.
	238	7	F	N.O.A.
		9	F	N.O.A.
	239	9	F	N.O.A.
		10	F	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

M=male; F=female

DO 067839
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YZ0014494

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
I 0	240	7	F	N.O.A.
		8	F	N.O.A.
	242	8	F	N.O.A.
		10	F	Kidneys (Both): pelvis extremely dilated; clear fluid-filled; little cortex present.
	243	6	F	N.O.A.
		8	F	N.O.A.
	244	6 ^b	F	N.O.A.
		7	F	N.O.A.
	246	5	F	N.O.A.
	247	6	F	N.O.A.
		7	F	N.O.A.
	249	7	F	N.O.A.
		9	F	N.O.A.
	250	8	F	N.O.A.
		10	F	N.O.A.
II 3	425	6	F	N.O.A.
		10	F	<u>Lymph nodes (mandibular):</u> reddened.
	426	5	F	N.O.A.
		7	F	N.O.A.
	428	6	F	N.O.A.
		7	F	N.O.A.
	429	6 ^b	F	<u>Salivary gland (Left):</u> posterior 2/3 red.
		7	F	N.O.A.
	431	7 ^b	F	N.O.A.
		8 ^b	F	N.O.A.

^aSelected for tissue preservation.

^bTissue inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable Abnormalities.

M=male; F=female

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YZ0014495

I-12
Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

<u>Group</u> ppm	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^c</u>
II(cont.) 3	432	7	F	N.O.A.
		8	F	N.O.A.
	433	8	F	N.O.A.
		9	F	N.O.A.
	434	7	F	N.O.A.
		10	F	N.O.A.
	435	7	F	N.O.A.
		10	F	N.O.A.
	436	5	F	N.O.A.
		7	F	N.O.A.
	438	8 ^b	F	N.O.A.
		9 ^b	F	N.O.A.
	439	7	F	N.O.A.
		8	F	N.O.A.
	440	6	F	N.O.A.
		8 ^b	F	N.O.A.
	441	6 ^b	F	N.O.A.
		8	F	N.O.A.
	442	8	F	N.O.A.
		9	F	N.O.A.
	443	5	F	N.O.A.
		7	F	N.O.A.
	444	7	F	N.O.A.
	445	7	F	N.O.A.
		10	F	N.O.A.
	447	7	F	N.O.A.
		8	F	N.O.A.
	448	8	F	N.O.A.
		9	F	N.O.A.
	450	8	F	N.O.A.
		9	F	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014496

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
III 10	625	3	F	N.O.A.
		4	F	N.O.A.
	626	9	F	N.O.A.
		10	F	N.O.A.
	627	7	F	N.O.A.
		10	F	N.O.A.
	628	6	F	N.O.A.
		7	F	N.O.A.
	630	4	F	N.O.A.
		5	F	N.O.A.
	631	4	F	N.O.A.
		5	F	N.O.A.
	632	9	F	N.O.A.
		10 ^b	F	N.O.A.
	633	5	F	N.O.A.
		6	F	N.O.A.
	634	8	F	N.O.A.
		9	F	N.O.A.
	635	9 ^b	F	N.O.A.
		10 ^b	F	N.O.A.
	636	4	F	N.O.A.
		5	F	N.O.A.
	637	6	F	N.O.A.
		7	F	N.O.A.
	639	8	F	N.O.A.
		9	F	Lymph nodes (mandibular): enlarged (6.0 x 0.3 cm); reddened.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014497

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
III (cont.) 10	640	6 ^b	F	N.O.A.
		10 ^b	F	N.O.A.
	641	7	F	N.O.A.
		9 ^b	F	N.O.A.
	642	6	F	N.O.A.
		7	F	N.O.A.
	643	6 ^b	F	N.O.A.
		10 ^b	F	N.O.A.
	644	7	F	N.O.A.
		8	F	N.O.A.
	645	6	F	N.O.A.
		10	F	N.O.A.
	646	7 ^b	F	N.O.A.
		9	F	N.O.A.
IV 30	647	6	F	N.O.A.
		8	F	N.O.A.
	648	8	F	N.O.A.
		9	F	N.O.A.
	649	9 ^b	F	N.O.A.
		10 ^b	F	N.O.A.
	650	6	F	N.O.A.
		9	F	N.O.A.
	825	6 ^b	F	N.O.A.
		7 ^b	F	N.O.A.
	826	5	F	N.O.A.
		7	F	N.O.A.
	827	9	F	N.O.A.
		10	F	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014498

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
IV(cont.) 30	828	5 ^b	F	N.O.A.
		8	F	N.O.A.
	830	4	F	N.O.A.
		8	F	N.O.A.
	831	7 ^b	F	N.O.A.
		8	F	N.O.A.
	835	7 ^b	F	N.O.A.
		10 ^b	F	N.O.A.
	837	5	F	N.O.A.
		6	F	N.O.A.
	838	6	F	N.O.A.
		8	F	N.O.A.
	839	6	F	N.O.A.
		8	F	N.O.A.
	840	6	F	N.O.A.
		8	F	N.O.A.
	841	6	F	N.O.A.
		10	F	N.O.A.
	842	4 ^b	F	N.O.A.
		7 ^b	F	N.O.A.
	843	5 ^b	F	N.O.A.
		6 ^b	F	N.O.A.
	844	5	F	N.O.A.
		8	F	N.O.A.
	846	6 ^b	F	N.O.A.
		9 ^b	F	<u>Liver</u> : pale red-brown.
	847	8	F	N.O.A.
		9 ^b	F	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded

^cN.O.A. = No observable abnormalities.

Key: M = male, F = female.

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YZ0014499

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

Group ppm	Litter No.	Pup No.	Sex	Observation(s) ^c
IV(cont.) 30	848	8	F	N.O.A.
		9	F	N.O.A.
	849	5	F	N.O.A.
		6	F	N.O.A.
V 300	1026	6 ^b	F	N.O.A.
		9 ^b	F	N.O.A.
	1027	6	F	N.O.A.
		8	F	N.O.A.
	1028	8	F	N.O.A.
		9	F	N.O.A.
	1029	7	F	N.O.A.
		9	F	N.O.A.
	1031	1	F	N.O.A.
		2	F	N.O.A.
	1032	9	F	N.O.A.
		10	F	N.O.A.
	1033	7	F	N.O.A.
		8 ^b	F	N.O.A.
	1034	6 ^b	F	N.O.A.
		9	F	N.O.A.
	1035	6	F	N.O.A.
		7	F	N.O.A.
	1036	7	F	N.O.A.
		8	F	N.O.A.
	1037	7	F	N.O.A.
		10	F	N.O.A.
	1038	6	F	N.O.A.
		9	F	N.O.A.

^aSelected for tissue preservation.^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.^cN.O.A. = No observable abnormalities.

Key: M = male; F = female.

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YZ0014500

Appendix I (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Gross Postmortem Observations - Day 21 Weanlings (Selected)^a

<u>Group</u> <u>ppm</u>	<u>Litter No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Observation(s)^c</u>
V(cont.) 300	1039	8	F	N.O.A.
		10 ^b	F	N.O.A.
	1040	7	F	N.O.A.
		9	F	N.O.A.
	1042	9	F	N.O.A.
		10	F	N.O.A.
	1043	6	F	N.O.A.
		8	F	N.O.A.
	1044	9	F	N.O.A.
		10	F	N.O.A.
	1045	6	F	N.O.A.
		7	F	N.O.A.
	1046	6	F	N.O.A.
		8	F	N.O.A.
	1048	4	F	N.O.A.
		5	F	N.O.A.
	1049	7	F	<u>Salivary gland (Left): moderately reddened.</u> <u>Lymph nodes (mesenteric): slightly reddened; enlarged approx. 1 1/2 x normal size.</u>
		9	F	N.O.A.
	1050	8	F	N.O.A.
		10	F	N.O.A.

^aSelected for tissue preservation.

^bTissues inadvertently placed in saline solution instead of 10% neutral buffered formalin solution; these tissues were subsequently discarded.

^cN.O.A. = No observable abnormalities.

Key: M = male, F = female.

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YZ0014501

Appendix J
An Inhalation Female Fertility Study
with Benzene in Rats

Mating Performance

<u>Group</u> ppm	<u>Female No.</u>	<u>Mating</u> <u>Confirmation^a</u>	<u>Day Found</u> <u>Mated^b</u>	<u>Pregnancy Status^c</u>
I 0	225	Yes	3	Yes
	226	Yes	1	Yes
	227	Yes	3	Yes
	228	Yes	2	Yes
	229	Yes	1	Yes
	230	Yes	4	Yes
	231	Yes	1	Yes
	232	Yes	2	Yes
	233	Yes	1	Yes
	234	Yes	6	No
	235	Yes	6	Yes
	236	Yes	6	Yes
	237	Yes	1	Yes
	238	Yes	7	Yes
	239	Yes	3	Yes
	240	Yes	4	Yes
	241	No	-	No
	242	Yes	1	Yes
	243	Yes	15	Yes
	244	Yes	2	Yes
	245	Yes	1	No
	246	Yes	1	Yes
	247	Yes	2	Yes
	248	Yes	4	Yes
	249	Yes	4	Yes
	250	Yes	1	Yes

^aMating confirmed on the basis of the following: vaginal plug, sperm in the vaginal smear, or evidence of pregnancy (i.e. pups, implantation sites/scars).

^bRepresents number of days from initiation of mating till evidence of mating was observed.

^cPregnancy determined on the basis of the following: parturition, implantation sites, or implantation scars at terminal sacrifice.

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YZ0014502

Appendix J (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Mating Performance

<u>Group</u> ppm	<u>Female No.</u>	<u>Mating Confirmation^a</u>	<u>Day Found Mated^b</u>	<u>Pregnancy Status^c</u>
II 1	425	Yes	4	Yes
	426	Yes	1	Yes
	427	Yes	4	No
	428	Yes	3	Yes
	429	Yes	2	Yes
	430	Yes	7	Yes
	431	Yes	3	Yes
	432	Yes	2	Yes
	433	Yes	5	Yes
	434	Yes	2	Yes
	435	Yes	4	Yes
	436	Yes	4	Yes
	437	Yes	d	Yes
	438	Yes	3	Yes
	439	Yes	4	Yes
	440	Yes	3	Yes
	441	Yes	3	Yes
	442	Yes	1	Yes
	443	Yes	4	Yes
	444	Yes	1	Yes
	445	Yes	1	Yes
	446	Yes	d	Yes
	447	Yes	5	Yes
	448	Yes	2	Yes
	449	Yes	6	Yes
	450	Yes	1	Yes

^aMating confirmed on the basis of the following: vaginal plug, sperm in the vaginal smear, or evidence of pregnancy (i.e. pups, implantation sites/scars).

^bRepresents number of days from initiation of mating till evidence of mating was observed.

^cPregnancy determined on the basis of the following: parturition, implantation sites, or implantation scars at terminal sacrifice.

^dDay 0 of gestation was not identified.

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YZ0014503

Appendix J (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Mating Performance

<u>Group</u> ppm	<u>Female No.</u>	<u>Mating Confirmation^a</u>	<u>Day Found Mated^b</u>	<u>Pregnancy Status^c</u>
III 10	625	Yes	3	Yes
	626	Yes	16	Yes
	627	Yes	2	Yes
	628	Yes	1	Yes
	629	Yes	4	No
	630	Yes	1	Yes
	631	Yes	8	Yes
	632	Yes	2	Yes
	633	Yes	6	Yes
	634	Yes	12	Yes
	635	Yes	2	Yes
	636	Yes	4	Yes
	637	Yes	4	Yes
	638	Yes	17	No
	639	Yes	7	Yes
	640	Yes	2	Yes
	641	Yes	3	Yes
	642	Yes	4	Yes
	643	Yes	2	Yes
	644	Yes	8	Yes
	645	Yes	1	Yes
	646	Yes	3	Yes
	647	Yes	3	Yes
	648	Yes	3	Yes
	649	Yes	2	Yes
	650	Yes	7	Yes

^aMating confirmed on the basis of the following: vaginal plug, sperm in the vaginal smear, or evidence of pregnancy (i.e. pups, implantation sites/scars).

^bRepresents number of days from initiation of mating till evidence of mating was observed.

^cPregnancy determined on the basis of the following: parturition, implantation sites, or implantation scars at terminal sacrifice.

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YZ0014504

Appendix J (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Mating Performance

<u>Group</u> <u>ppm</u>	<u>Female No.</u>	<u>Mating</u> <u>Confirmation^a</u>	<u>Day Found</u> <u>Mated^b</u>	<u>Pregnancy Status^c</u>
IV 30	825	Yes	2	Yes
	826	Yes	7	Yes
	827	Yes	5	Yes
	828	Yes	2	Yes
	829 ^e	-	-	-
	830	Yes	1	Yes
	831	Yes	8	Yes
	832	Yes	2	Yes
	833	Yes	1	No
	834	Yes	1	No
	835	Yes	2	Yes
	836	Yes	5	Yes
	837	Yes	1	Yes
	838	Yes	8	Yes
	839	Yes	5	Yes
	840	Yes	2	Yes
	841	Yes	5	Yes
	842	Yes	2	Yes
	843	Yes	2	Yes
	844	Yes	1	Yes
	845	Yes	2	No
	846	Yes	2	Yes
	847	Yes	2	Yes
	848	Yes	4	Yes
	849	Yes	2	Yes
	850	Yes	2	No

^aMating confirmed on the basis of the following: vaginal plug, sperm in the vaginal smear, or evidence of pregnancy (i.e. pups, implantation sites/scars).

^bRepresents number of days from initiation of mating till evidence of mating was observed.

^cPregnancy determined on the basis of the following: parturition, implantation sites, or implantation scars at terminal sacrifice.

^eAnimal was killed accidentally (i.e., dropped during handling) during Week 5 of the pre-mating treatment period.

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YZ0014505

Appendix J (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Mating Performance

<u>Group</u> <u>ppm</u>	<u>Female No.</u>	<u>Mating</u> <u>Confirmation^a</u>	<u>Day Found</u> <u>Mated^b</u>	<u>Pregnancy Status^c</u>
V 300	1025	Yes	15 ^f	Yes
	1026	Yes	2	Yes
	1027	Yes	4	Yes
	1028	Yes	14	Yes
	1029	Yes	3	Yes
	1030	Yes	1	No
	1031	Yes	5	Yes
	1032	Yes	1	Yes
	1033	Yes	4	Yes
	1034	Yes	2	Yes
	1035	Yes	4	Yes
	1036	Yes	1	Yes
	1037	Yes	1	Yes
	1038	Yes	1	Yes
	1039	Yes	2	Yes
	1040	Yes	5	Yes
	1041	Yes	1	No
	1042	Yes	4	Yes
	1043	Yes	5	Yes
	1044	Yes	3	Yes
	1045	Yes	6	Yes
	1046	Yes	1	Yes
	1047	Yes	1	No
	1048	Yes	1	Yes
	1049	Yes	7	Yes
	1050	Yes	1	Yes

^aMating confirmed on the basis of the following; vaginal plug, sperm in the vaginal smear, or evidence of pregnancy (i.e. pups, implantation sites/scars).

^bRepresents number of days from initiation of mating till evidence of mating was observed.

^cPregnancy determined on the basis of the following; parturition, implantation sites, or implantation scars at terminal sacrifice.

^fDue to technician error, this female was not placed with a male on the 14th evening of the mating period.

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YZ0014506

Appendix K
An Inhalation Female Fertility Study
with Benzene in Rats

Postmortem Observations for Pups Culled from Litters on Day 4 of Lactation

<u>Group</u> ppm	<u>Female</u> <u>No.</u>	<u>Pup</u> <u>No.</u> ^a	<u>Sex</u>	<u>Observation</u>
I 0	226	1,2,3	M	N.O.A.
		9,15	F	N.O.A.
	227	7,8,13	F	N.O.A.
	229	4	M	N.O.A.
		7,8,9	F	N.O.A.
	231	5	M	N.O.A.
	233	4	M	N.O.A.
		7,11,12	F	N.O.A.
	235	5	M	N.O.A.
	238	4,7,9	M	N.O.A.
	239	4	M	N.O.A.
	240	2,5	M	N.O.A.
		1,4	M	N.O.A.
	242	12	F	N.O.A.
		4	M	N.O.A.
	243	7,8,10,13,15	F	N.O.A.
		10	F	N.O.A.
	247	3,7	M	N.O.A.
		12	F	N.O.A.
	250	10, 12	F	N.O.A.

Key: M = Male, F = Female, N.O.A. = no observable abnormalities.

^aArbitrary numbers identifying a pups location within a partition tray for purposes of random culling; pups were not individually identified during lactation.

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Appendix K (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Postmortem Observations for Pups Culled from Litters on Day 4 of Lactation

<u>Group</u> <u>ppm</u>	<u>Female</u> <u>No.</u>	<u>Pup</u> <u>No.^a</u>	<u>Sex</u>	<u>Observation</u>
II 1	425	2,3,8	M	N.O.A.
		12	F	N.O.A.
	426	5	F	N.O.A.
	428	7,8,10	F	N.O.A.
	429	4	M	N.O.A.
		7,8,10	F	N.O.A.
	431	1	M	N.O.A.
		7,13,14	F	N.O.A.
	432	7,8	F	N.O.A.
	433	4,5,7	M	N.O.A.
	434	2,6	M	N.O.A.
	435	5	F	N.O.A.
	438	2,4,7	M	N.O.A.
	440	2,4,7	M	N.O.A.
		11,12	F	N.O.A.
	441	3,4,6	M	N.O.A.
		13	F	N.O.A.
	442	1,8	M	N.O.A.
	445	7,8,13	F	N.O.A.
	447	2	M	N.O.A.
	450	1,4,8	M	N.O.A.

Key: M = Male, F = Female, N.O.A. = no observable abnormalities.

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YZ0014508

Appendix K (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Postmortem Observations for Pups Culled from Litters on Day 4 of Lactation

<u>Group</u>	<u>Female No.</u>	<u>Pup No.^a</u>	<u>Sex</u>	<u>Observation</u>
ppm III 10	626	1,3,8	M	N.O.A.
	627	1	M	N.O.A.
	628	1,4,6	M	N.O.A.
	630	5,6	M	N.O.A.
		8	F	N.O.A.
	632	2	M	N.O.A.
		11,12,13,14	F	N.O.A.
	634	5,7	M	N.O.A.
		9	F	N.O.A.
	635	1,2	M	N.O.A.
		9,13	F	N.O.A.
	637	3,4,7	M	N.O.A.
	639	1	M	N.O.A.
		9	F	N.O.A.
	640	8,9,13	F	N.O.A.
	641	1,8	M	N.O.A.
	643	2	M	N.O.A.
		10,11,12,13	F	N.O.A.
	644	4,6	M	N.O.A.
		8,9,15,16	F	N.O.A.
	645	9,10	F	N.O.A.
	646	2,5,8	M	N.O.A.
		10,12	F	N.O.A.

Key: M = Male, F = Female. N.O.A. = no observable abnormalities.

^aArbitrary numbers identifying a pups location within a partition tray for purposes of random culling; pups were not individually identified during lactation.

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YZ0014509

Appendix K (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Postmortem Observations for Pups Culled from Litters on Day 4 of Lactation

<u>Group</u>	<u>Female No.</u>	<u>Pup No.^a</u>	<u>Sex</u>	<u>Observation</u>
ppm III 10 (cont.)	647	9	F	N.O.A.
	648	5	F	N.O.A.
	649	1,4,5,7,8,10	M	N.O.A.
	650	1,2	M	N.O.A.
		11	F	N.O.A.
1V 30	825	6,12,13	F	N.O.A.
	826	4,12,13	F	N.O.A.
	827	1,3,7	M	N.O.A.
		10	F	N.O.A.
	831	4	M	N.O.A.
	835	1,3,6	M	N.O.A.
		13,15	F	N.O.A.
	838	5,6	M	N.O.A.
		10,11,14	F	N.O.A.
	839	1	M	N.O.A.
		9,10,13	F	N.O.A.
	840	4	M	N.O.A.
	841	1,2,7	M	N.O.A.
	842	5,9,13,14	F	N.O.A.
	844	4,10,12	F	N.O.A.
	846	5,7	M	N.O.A.
		1	M	No milk in stomach
	847	6,11,13	F	N.O.A.

Key: M = Male, F = Female, N.O.A. = no observable abnormalities.

^aArbitrary numbers identifying a pups location within a partition tray for purposes of random culling; pups were not individually identified during lactation.

Appendix K (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Postmortem Observations for Pups Culled from Litters on Day 4 of Lactation

<u>Group</u> ppm	<u>Female</u> <u>No.</u>	<u>Pup</u> <u>No.</u> ^a	<u>Sex</u>	<u>Observation</u>
	848	5,6,8	M	N.O.A.
1V	1026	3,6,7,8	M	N.O.A.
30 (cont.)		12	F	N.O.A.
V	1029	5	M	N.O.A.
300	1032	1,4,5,8,9	M	N.O.A.
	1033	7	F	N.O.A.
	1034	5	M	N.O.A.
	1035	2,4,8	M	N.O.A.
	1036	1,4,6,8	M	N.O.A.
	1037	4	M	N.O.A.
		8,9	F	N.O.A.
	1038	6,10,12,13,15	F	N.O.A.
	1040	3,4,7	M	N.O.A.
		10,12	F	N.O.A.
	1044	2,5,10,11	M	N.O.A.
	1046	5,6,8 10	M	N.O.A.
		2	M	(L) testis
		12	F	red in color N.O.A.
	1049	2,3,4,9,10	M	N.O.A.
	1050	2,5,9	M	N.O.A.

Key: M = Male, F = Female, N.O.A. = no observable abnormalities; L = Left
^aArbitrary numbers identifying a pups location within a partition tray for
 purposes of random culling; pups were not individually identified during
 lactation.

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YZ0014511

L-1
Appendix L
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Dead Pup Observations

<u>Group ppm</u>	<u>Female No.</u>	<u>Pup No.</u>	<u>Sex</u>	<u>Day Found Dead</u>	<u>Observation</u>
I 0	230	A	F	0	Autolyzed.
	236	A	F	14	Autolyzed.
	237	A	M	0	N.O.A.
	244	A	F	0	N.O.A.
		B	M	0	<u>Kidney (L):</u> dark purple; <u>Tail: S kink.</u>
		C	F	0	<u>Tail: S kink.</u>
		D	F	1	<u>Tail: S kink.</u>
		E	F	1	<u>Tail: S kink.</u>
	426	A	M	0	N.O.A.
		B	F	2	Autolyzed.
II 1	434	A	M	0	N.O.A.
	436	A	F	0	N.O.A.
	440	A	M	3	Autolyzed.
	448	A	M	0	N.O.A.
	625	A	F	0	N.O.A.
III 10		B	F	16	Autolyzed.
		C	M	19	Autolyzed.
		D	M	19	N.O.A.
		E	F	19	N.O.A.
		F	U.D.	20	Autolyzed.
		G	F	21	<u>Thymus: small</u> (one-fourth normal size).

Key: L = left, S = slight, N.O.A. = no observable abnormalities, M = Male
F = Female, U.D. = undetermined.

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YZ0014512

L-2
Appendix L (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Dead Pup Observations

<u>Group</u> <u>ppm</u>	<u>Female</u> <u>No.</u>	<u>Pup</u> <u>No.</u>	<u>Sex</u>	<u>Day Found</u> <u>Dead</u>	<u>Observation</u>
III 10 (cont.)	628	A	M	1	N.O.A.
	630	A	M	11	N.O.A.
		B	F	11	Autolyzed.
		C	U.D.	12	Partially cannibalized.
		D	F	14	N.O.A.
	637	A	F	0	N.O.A.
		B	M	1	<u>Kidney (R):</u> dark red.
	639	A	F	3	N.O.A.
		B	F	9	N.O.A.
	641	A	F	0	N.O.A.
	642	A	M	0 ^a	N.O.A.
		B	F	0 ^a	Autolyzed.
		C	F	0 ^a	N.O.A.
		D	F	0	Autolyzed.
		E	M	0	Autolyzed.
	648	A	F	4	E pale in color head crushed.
	842	A	M	1	<u>Testis (R):</u> missing.
	846	A	F	0	N.O.A.
IV 30		B	M	0	N.O.A.
		C	M	9	N.O.A.

^aPups removed from litter prior to completion of parturition.

Key: R = right, N.O.A. = no observable abnormalities, M = Male F = Female,
U.D. = undetermined, E = extremely.

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YZ0014513

L-3
Appendix L (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Dead Pup Observations

<u>Group</u> <u>ppm</u>	<u>Female</u> <u>No.</u>	<u>Pup</u> <u>No.</u>	<u>Sex</u>	<u>Day Found</u> <u>Dead</u>	<u>Observation</u>
V 300	1025	A	M	0	N.O.A.
		B	M	0	N.O.A.
		C	M	0	N.O.A.
		D	F	0	N.O.A.
		E	F	1	Autolyzed.
		F	F	1	Autolyzed.
		G	M	1	Autolyzed.
		H	F	1	Autolyzed.
	1026	A	M	13	Autolyzed: Ab- dominal dis- tension.
	1027	A	F	0	Pup is very pale; all tissues pale.
		B	F	0	N.O.A.
	1028	A	M	3	N.O.A.
		B	F	4	Autolyzed.
		C	F	5	Autolyzed.
	1031	A	M	0 ^a	N.O.A.
		B	M	0 ^a	N.O.A.
		C	F	0 ^a	N.O.A.
		D	F	0 ^a	N.O.A.
	1039	A	M	0	Autolyzed.
	1044	A	F	1	N.O.A.

^aPups removed from litter prior to completion of parturition.

Key: N.O.A. = no observable abnormalities, M = Male F = Female.

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YZ0014514

L-4
Appendix L (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

79-2425

Dead Pup Observations

<u>Group</u> ppm	<u>Female</u> <u>No.</u>	<u>Pup</u> <u>No.</u>	<u>Sex</u>	<u>Day Found</u> <u>Dead</u>	<u>Observation</u>
V 300 (cont.)	1045	A	M	0	N.O.A.
		B	M	0	N.O.A.
		C	F	15	N.O.A.

Key: N.O.A. = no observable abnormalities, M = Male F = Female.

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YZ0014515

Appendix M
An Inhalation Female Fertility Study
with Benzene in Rats

Certified Feed Information^a

<u>Interval</u>	<u>Date</u>	<u>Lot. No.</u>
Acclimation	12/19/79	Oct 03792B
Acclimation	12/26/79	Oct 22791D
Acclimation	1/2/80	Oct 22791D
Treatment period	1/9/80	Oct 22791C
Treatment period	1/16/80	Oct 22791C
Treatment period	1/23/80	Dec 6791A
Treatment period	1/30/80	Dec 06791A
Treatment period	2/6/80	Dec 06791A
Treatment period	2/13/80	Dec 06791C
Treatment period	2/20/80	Dec 20791C
Treatment period	2/27/80	Dec 06791E
Treatment period	3/5/80	Dec 27791C
Treatment period	3/12/80	Dec 27792C
Mating period	3/19/80	Feb 14801E
Mating period	3/26/80	Feb 14801E
Mating period	4/2/80	Jan 31801B
Gestation/Lactation	4/9/80	Feb 14801C
Gestation/Lactation	4/16/80	Feb 14801C
Gestation/Lactation	4/23/80	Feb 28801F
Day 21 Sacrifices	4/30/80	Feb 28801F
Day 21 Sacrifices	5/7/80	Feb 14801A

^aPurina Laboratory Chow 5002 (Certified Diets) Mash; ad libitum.

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YZ0014516

Appendix N
An Inhalation Female Fertility Study
With Benzene in Rats

Analysis of Benzene^a

	<u>Pre-test</u>	<u>Study Interval</u>		<u>Completion of Treatment</u>
		<u>Prior to initiation of treatment</u>	<u>Week 6 of the Treatment Period</u>	
Date Collected: 12/3/1979		1/7/1980	11/13/79	5/11/80
Freezing Point (°C)	5.5064	5.084	5.5192	5.4895
Purity (%)	99.96	99.97	99.98	99.94
Specific Gravity	0.8845	0.8845	0.8843	0.8843
Total Sulfur by Microcou- lometry -ppm	<1.0	<1.0	<1.0	<1.0
GC Analysis				
Sats ppm	42	42	38	49
Toluene ppm	28	28	26	29
Acetone ppm	2	2	0.4	

^aAnalyses were performed at the Exxon Research and Engineering Company,
Linden, N.J.

DO 067862
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YZ0014517

O-1
Appendix O
An Inhalation Female Fertility Study
With Benzene in Rats

79-2425

Mean Pup Weights by Sex - (grams) - Group I - (Oppm)

Female No.	Day 0		Day 4				Day 14		Day 21	
	M	F	Pre-Cull		Post-Cull		M	F	M	F
			M	F	M	F				
225	A- 7.1	A- 6.7	A- 9.0	A- 8.5	A- 9.0	A- 8.5	A- 22.3	A- 21.2	A- 39.2	A- 37.9
226	5.5	5.6	8.0	8.0	8.2	7.9	23.0	21.9	35.6	34.7
227	6.3	5.9	10.0	9.6	10.0	9.5	21.9	20.8	38.2	38.3
228	6.1	6.2	9.6	9.7	9.6	9.7	22.3	21.2	35.6	36.9
229	5.9	5.6	8.4	8.2	8.4	8.3	21.3	22.2	30.6	38.2
230	7.1	6.7	11.8	10.8	11.8	10.8	26.0	23.7	41.1	36.2
231	7.0	6.7	10.1	9.5	10.0	9.5	23.5	23.0	39.0	38.1
233	6.1	5.7	9.5	8.9	9.5	9.0	23.1	22.0	38.4	38.9
235	6.7	6.5	10.9	10.7	10.8	10.7	26.6	26.2	44.5	43.3
236	5.8	5.8	8.6	9.1	8.6	9.1	20.0	19.8	33.5	33.9
237	7.4	6.8	10.8	9.9	10.8	9.9	25.0	23.0	41.5	38.9
238	6.0	5.9	9.1	8.9	8.9	8.9	21.9	21.4	33.4	32.5
239	6.4	5.6	11.1	10.5	11.0	10.5	24.7	22.4	43.8	39.2
240	6.7	6.3	10.7	9.9	10.7	9.9	25.2	23.5	36.4	35.5
242	6.4	6.1	9.6	9.2	9.7	9.2	24.1	23.6	36.5	35.6
243	5.1	5.4	7.6	7.9	7.8	7.7	22.1	23.2	34.6	37.6
244	6.1	5.8	6.6	6.3	6.6	6.3	11.8	10.8	22.1	20.8
246	7.0	7.4	12.2	12.9	12.2	12.9	27.6	25.3	46.4	42.0
247	5.8	5.6	8.7	8.5	8.7	8.5	22.5	21.0	33.8	31.3
249	6.0	5.8	8.3	8.0	8.4	7.9	22.5	20.5	36.3	33.1
250	6.7	6.5	11.0	11.1	11.0	11.2	25.7	27.3	43.7	45.3
Mean:	6.3	6.1	9.6	9.3	9.6	9.3	23.0	22.1	37.3	36.6
S.D.:	0.6	0.5	1.4	1.4	1.4	1.4	3.2	3.2	5.4	5.0
N :	21	21	21	21	21	21	21	21	21	21

For explanation of statistical symbol: A-; see Appendix Q.

Key: M = Male
F = Female

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YZ0014518

0-2
Appendix 0 (cont.)
An Inhalation Female Fertility Study
With Benzene in Rats

79-2425

Mean Pup Weights by Sex (grams) - Group II (1 ppm)

Female No.	Day 0		Day 4				Day 14		Day 21	
	M	F	Pre-Cull		Post-Cull		M	F	M	F
			M	F	M	F				
425	6.5	6.1	9.1	8.9	9.2	8.8	24.4	22.7	36.3	33.5
426	6.5	6.0	10.9	10.2	10.9	10.2	24.9	23.8	39.8	39.0
428	6.7	6.3	10.3	10.5	10.3	10.6	22.5	23.3	41.9	44.4
429	6.2	5.8	9.6	8.7	9.8	8.5	24.7	22.2	42.7	38.7
431	5.8	5.4	8.9	8.1	8.7	8.1	21.9	21.7	33.7	33.0
432	5.9	5.4	8.7	8.0	8.7	8.0	21.2	19.7	32.2	29.7
433	6.6	6.3	8.6	8.5	9.0	8.5	20.3	20.0	33.9	33.9
434	6.3	5.7	9.0	8.3	9.0	8.3	22.6	21.7	35.7	34.6
435	6.4	5.9	8.9	8.8	8.9	8.8	22.8	20.1	35.4	31.6
436	6.6	5.7	12.4	10.7	12.4	10.7	27.1	24.6	42.9	38.7
438	5.9	5.9	10.3	9.2	10.2	9.2	27.1	23.8	47.1	40.3
439	6.1	5.5	10.3	9.7	10.3	9.7	20.6	19.7	31.8	32.8
440	6.0	5.6	9.4	8.7	9.6	8.6	21.9	20.2	36.9	34.1
441	6.7	6.1	8.7	6.1	8.2	6.1	22.3	16.5	38.9	27.0
442	6.9	6.4	9.6	9.1	9.5	9.1	24.7	24.8	38.2	37.0
443	6.9	6.6	11.4	11.0	11.4	11.0	20.3	19.7	26.8	25.8
444	6.9	4.9	12.3	9.0	12.3	9.0	26.6	22.0	46.9	35.4
445	6.9	6.4	10.6	10.4	10.6	10.5	25.6	25.1	42.9	40.6
447	6.6	6.6	10.3	10.0	10.2	10.0	24.6	23.2	41.2	40.3
448	5.3	5.1	9.7	9.2	9.7	9.2	20.8	20.3	30.2	30.1
449	7.3	-	12.4	-	12.4	-	16.3	-	16.3	-
450	6.7	6.3	11.1	10.8	11.2	10.8	29.3	28.7	50.0	47.8
Mean:	6.4	5.9	10.1	9.2	10.1	9.2	23.3	22.1	37.4	35.6
S.D.:	0.5	0.5	1.2	1.2	1.2	1.2	2.9	2.6	7.5	5.5
N :	22	21	22	21	22	21	22	21	22	21

No statistically significant differences from the control group.

Key: M = Male
F = Female

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YZ0014519

0-3
Appendix D (cont.)
An Inhalation Female Fertility Study
With Benzene in Rats

79-2425

Mean Pup Weights by Sex (grams) - Group III (10 ppm)

Female No.	Day 0		Day 4				Day 14		Day 21	
	M	F	Pre-Cull		Post-Cull		M	F	M	F
			M	F	M	F				
625	7.1	6.3	11.0	9.9	11.0	9.9	15.5	13.4	17.3	13.1
626	6.4	6.4	11.1	10.7	10.8	10.7	24.9	24.2	36.6	42.5
627	5.7	5.3	8.3	7.7	8.2	7.7	18.8	17.5	28.4	26.4
628	6.1	5.2	9.2	8.1	9.2	8.1	19.7	17.8	29.6	26.5
630	6.3	5.9	8.4	8.3	8.2	8.3	11.6	13.3	24.7	24.6
631	7.2	6.9	13.0	13.0	13.0	13.0	30.8	30.3	51.4	50.0
632	6.3	6.3	9.2	8.9	9.1	8.9	22.2	22.7	36.2	38.1
633	6.9	6.2	12.2	11.1	12.2	11.1	25.6	24.8	41.8	40.7
634	5.8	5.8	10.3	10.5	10.1	10.6	25.5	26.2	39.3	41.7
635	6.7	6.3	10.0	9.3	10.1	9.4	25.8	24.4	44.9	40.9
636	8.0	7.6	16.0	15.5	16.0	15.5	32.4	32.4	54.9	54.5
637	6.2	6.0	9.3	8.7	9.2	8.7	24.7	23.3	39.9	37.3
639	6.9	6.4	10.4	10.5	10.4	10.3	24.7	23.9	43.0	39.9
640	6.5	6.3	8.9	8.5	8.9	8.9	22.9	23.0	39.4	37.8
641	6.4	6.4	9.3	8.9	9.4	8.9	20.0	19.9	30.0	29.3
642	7.2	6.9	12.7	11.6	12.7	11.6	26.0	23.8	45.4	42.3
643	6.5	6.4	10.1	9.3	10.0	9.5	24.6	23.4	42.2	38.3
644	5.5	5.2	8.1	7.5	8.0	7.6	23.4	22.5	33.8	33.7
645	6.2	6.1	9.1	8.9	9.1	9.0	21.8	23.1	35.2	36.8
646	5.6	5.0	8.5	8.0	8.6	8.3	23.3	23.9	35.3	37.5
647	7.4	6.7	10.2	10.1	10.2	10.2	21.8	20.6	37.8	35.2
648	6.8	6.5	12.5	11.8	12.5	11.8	30.2	28.6	48.6	47.0
649	6.4	6.3	9.7	9.9	9.7	9.9	23.8	24.3	39.3	39.7
650	6.1	5.5	9.8	9.0	9.7	9.3	24.9	23.6	39.2	37.8
Mean:	6.5	6.2	10.3	9.8	10.3	9.9	23.5	23.0	38.1	37.1
S.D.:	0.6	0.6	1.9	1.8	1.9	1.8	4.5	4.4	8.4	8.6
N :	24	24	24	24	24	24	24	24	24	24

No statistically significant differences from the control group.

Key: M = Male
F = Female

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0-4
Appendix D (cont.)
An Inhalation Female Fertility Study
With Benzene in Rats

79-2425

Mean Pup Weights by Sex (grams) - Group IV (30 ppm)

Female No.	Day 0		Day 4				Day 14		Day 21	
	M	F	Pre-Cull		Post-Cull		M	F	M	F
			M	F	M	F				
825	7.1	6.8	9.4	9.0	9.4	8.9	21.9	20.4	35.2	33.1
826	6.6	6.1	10.2	9.7	10.2	10.0	24.4	24.4	38.3	37.4
827	6.4	5.9	10.7	10.2	11.0	10.1	25.6	24.7	39.5	37.0
828	6.8	6.5	10.6	10.0	10.6	10.0	18.6	20.0	31.2	32.5
830	6.2	6.1	11.3	11.3	11.3	11.3	26.3	26.7	37.8	41.5
831	6.1	6.5	9.4	9.5	9.5	9.5	18.8	19.9	29.2	31.8
835	6.1	5.7	8.7	8.3	8.6	8.1	21.9	20.6	33.7	31.3
837	7.2	6.7	11.3	11.9	11.3	11.9	26.3	26.7	42.4	40.8
838	6.1	5.8	9.6	8.7	9.8	9.1	25.1	23.2	40.1	35.8
839	5.9	5.2	9.1	8.3	9.2	8.1	21.2	20.1	31.4	30.6
840	5.8	5.5	9.3	8.5	9.2	8.5	18.7	18.0	27.3	26.5
841	5.5	5.3	8.3	7.8	8.3	7.8	20.8	19.6	31.0	29.5
842	5.7	5.8	8.5	8.2	8.5	8.4	19.8	19.4	30.4	30.7
843	7.4	6.8	13.8	12.3	13.8	12.3	29.2	26.1	45.9	41.9
844	5.8	5.4	8.7	8.3	8.7	8.2	20.7	20.6	29.0	30.1
846	5.7	5.7	7.7	8.0	7.9	8.0	17.9	19.4	29.4	31.4
847	6.7	6.6	9.4	9.6	9.4	9.6	18.7	18.9	30.6	31.5
848	6.1	6.0	9.3	9.3	9.3	9.3	19.1	21.3	30.3	33.6
849	7.9	7.6	14.1	13.6	14.1	13.6	29.4	29.1	45.9	43.6
Mean:	6.4	6.1	10.0	9.6	10.0	9.6	22.3	22.1	34.7	34.2
S.D.:	0.7	0.6	1.7	1.6	1.7	1.6	3.7	3.2	5.9	4.8
N :	19	19	19	19	19	19	19	19	19	19

No statistically significant differences from the control group.

Key: M = Male
F = Female

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O-5
Appendix O (cont.)
An Inhalation Female Fertility Study
With Benzene in Rats

79-2425

Mean Pup Weights by Sex - (grams) Group V (300 ppm)

Female No.	Day 0		Day 4				Day 14		Day 21	
	M	F	Pre-Cull		Post-Cull		M	F	M	F
			M	F	M	F				
1025	6.5	6.0	-	-	-	-	-	-	-	-
1026	5.8	5.4	9.4	9.0	9.2	9.0	15.2	14.9	24.5	24.5
1027	6.9	6.4	11.2	10.4	11.2	10.4	23.1	21.8	39.9	35.2
1028	5.9	5.9	6.4	5.8	6.4	5.8	16.7	15.3	24.1	23.2
1029	5.8	5.4	9.4	9.1	9.3	9.1	21.1	20.3	27.9	28.3
1031	-	7.0	-	13.1	-	13.1	-	28.0	-	46.8
1032	5.5	5.4	8.2	8.1	8.1	8.1	22.4	22.5	33.2	33.2
1033	5.4	5.3	9.6	9.1	9.6	9.3	22.5	21.5	37.5	36.5
1034	6.1	5.6	9.0	8.6	9.0	8.6	23.0	21.1	33.7	30.1
1035	6.1	5.8	10.0	9.6	10.2	9.6	22.9	21.2	36.6	32.5
1036	5.6	5.7	8.4	8.4	8.3	8.4	20.8	21.1	30.5	31.3
1037	6.8	5.8	9.8	9.1	10.0	9.2	22.4	20.8	35.9	33.1
1038	5.5	5.4	8.5	8.1	8.5	8.1	21.5	20.0	32.9	30.7
1039	5.8	5.4	10.3	9.6	10.3	9.6	22.3	21.2	34.6	31.1
1040	6.7	6.4	9.8	9.1	10.0	9.2	24.6	23.7	41.3	40.0
1042	6.1	5.7	10.9	10.0	10.9	10.0	22.1	20.6	35.5	33.4
1043	6.0	5.9	9.4	10.0	9.4	10.0	18.9	19.9	30.0	31.3
1044	5.6	5.3	8.5	8.4	8.5	8.4	22.4	21.5	34.6	33.9
1045	6.6	6.4	10.7	8.9	10.7	8.9	23.0	18.2	37.2	36.5
1046	5.9	5.7	8.8	8.2	8.7	8.3	20.5	19.0	29.5	27.8
1048	7.7	7.0	14.1	13.6	14.1	13.6	26.9	25.9	43.4	40.3
1049	6.2	6.0	10.4	9.8	10.5	9.8	26.1	24.1	43.5	36.9
1050	6.6	6.0	10.1	9.5	10.0	9.5	21.3	20.6	34.9	32.7
Mean:	6.1	5.9	9.7	9.3	9.7	9.4	21.8	21.1	34.3	33.2
S.D.:	0.6	0.5	1.5	1.6	1.5	1.6	2.7	2.9	5.4	5.2
N :	22	23	21	22	21	22	21	22	21	22

No statistically significant differences from the control group.

Key: M = Male
F = Female

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YZ0014522

DETERMINATION OF POLLUTANTS IN DRINKING WATER GIVEN
TO ANIMALS FOR STUDIES NO. 79-2425 AND 79-7342

Report No.: 80023
Sponsor: Chemical Manufacturers' Association and
American Petroleum Institute
Washington, D.C.
Prepared by: James C. Eschbach Date: September 3, 1980
Issued by: Bio/dynamics Inc.
Department of Metabolism and Analytical Chemistry
Environmental Sciences
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SUMMARY

The drinking water given to rats for Studies No. 79-2425 and 79-7342 was sampled and assayed for residues which could interfere with the studies. The compounds assayed included benzene, trace metals, pesticides and PCBs. The samples were assayed according to E.P.A. proposed and established pesticide procedures using mass spectrometry, atomic absorption spectrometry and gas chromatography.

The results obtained illustrate that < 1.0 ppb of benzene, < 10 ppb trace metals assayed, < 1.0 ppb chlorinated pesticides, < 4.0 ppb carbamates and < 2.0 ppb of PCBs were determined in the drinking water samples collected from the animal rooms.

Joseph S. O'Grodnick 9-3-80
Joseph S. O'Grodnick, Ph.D.
Director
Department of Metabolism and
Analytical Chemistry

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YZ0014523

1.0 INTRODUCTION

Drinking water samples were collected at two intervals from the rooms in which the animals for Studies No. 79-2425 and 79-7342 were housed. These samples were assayed for compounds which could have adverse effects on the studies if they were present in the drinking water. The samples were assayed for benzene, trace metals, pesticides and PCBs at the beginning and end of the studies.

2.0 EXPERIMENTAL

Water samples were collected and composited since they were from the same water source. An aliquot was taken for benzene for assay according to Method 624 for volatile organic compounds by purge and trap prior to g.c./mass spectrometry. This sample was collected in an air-tight container to prevent volatilization prior to assay. Additional aliquots were collected for the analyses of pesticides, metals and PCBs. The assays were performed according to proposed or approved E.P.A. methodology.

3.0 RESULTS

The data obtained illustrate that < 1.0 ppb of benzene, < 10 ppb trace metals, <1.0 ppb of chlorinated and <4.0 ppb carbamate pesticides and < 2.0 ppb of PCBs were determined in the water samples assayed. Table I summarizes the data obtained in this study.

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4.0 ACKNOWLEDGEMENT

This study was supported by both the Chemical Manufacturers' Association and the American Petroleum Institute.

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TABLE 1. RESULTS OF DRINKING WATER ASSAYS FOR STUDIES
NO. 79-2425 AND 79-7342

<u>METALS</u>	<u>Assayed 6/12/80 ppb</u>	<u>Assayed 3/17/80 ppb</u>
Antimony	< 6.7 ^b	< 1.3
Beryllium	< 1.0	< 1.0
Cadmium	< 1.0	< 1.0
Arsenic	< 1.0 ^a	< 0.5
Lead	1.2	< 1.0
Mercury	< 0.5	< 0.5
Selenium	< 8.3	< 1.0

a. Samples assayed using metal hydride mode

PESTICIDES

Lindane	< 1.0	< 1.0
Heptachlor	< 1.0	< 1.0
DDT	< 1.0	< 1.0
Dieldrin	< 1.0	< 1.0
Malathion	< 1.0	< 1.0
Carbamate	< 1.0	< 1.0
PCB	< 2.0	< 1.0

BENZENE < 1.0 < 1.0

- a. Level of detection high because graphite method of analysis used instead of hydride method of analysis.
- b. Level of detection higher because of possible loss in lamp efficiency.

Appendix Q
An Inhalation Female Fertility Study
with Benzene in Rats

Methodology and References

Parameter	Reference or Description
Body Weights:	
1. Pre-mating treatment period (weekly) - females	INTEC Automatic Data Acquisition System. Body weights of animals reweighed when weights were questionable, were taken using Torbal Torsion Balance.
2. Gestation and lactation body weights, dams and offspring	Torbal Torsion Balance.

Statistical Analysis of Data

Results of analyses by the indicated statistical procedures were reported for the following:

Parameter	Method
1. Body weights - Pre-mating Treatment Period (Weeks 1-10)	A
2. Body weight changes - Pre-Mating Treatment Period (Weeks 1-10)	A
3. Maternal body weights and body weight changes - gestation and lactation periods.	A
1. Number of offspring (live, dead total - Day 0)	A
2. Mean pup weights distinguished by sex on a per-litter basis	A
3. Pup organ weights and organ weight ratios	C
4. No. of implantation scars	A
5. Unaccounted-for-Concepti	A
6. Pup Survival indices (Days 0-4 and Days 4-21)	B
7. Pregnancy rate	B

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Q-2
Appendix Q (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Methodology and References (cont.)

Statistical Analysis of Data (cont.)

Method A^a:

Statistical evaluation of equality of means was made by the appropriate one-way analysis of variance technique, followed by a multiple comparison procedure if needed. First, Bartlett's test was performed to determine if groups had equal variances. If the variances were equal, parametric procedures were used; if not, nonparametric procedures were used. The parametric procedures were the standard one-way ANOVA using the F-distribution to assess significance. If significant differences among the means were indicated, Dunnett's test was used to determine which means were significantly different from the control. If a nonparametric procedure for testing equality of means was needed, the Kruskal-Wallis test was used, and if differences were indicated a summed rank test (Dunn) was used to determine which treatments differed from control.

A statistical test for trend in the dose level was also performed. In the parametric case (i.e. equal variance), standard regression techniques with a test for trend and lack of fit were used. In the nonparametric case, Jonckheere's test for monotonic trend was used.

The test for equal variance (Bartlett's) was conducted at the 1%, two-sided risk level. All other statistical tests were conducted at the 5% and 1% two-sided risk levels.

^aSnedecor, G.W., and Cochran, W.G., Statistical Methods, 6th ed., Iowa State Univ. Press (1967), Hollander and Wolfe, Nonparametric Statistical Methods, John Wiley and Sons, New York (1973), Dunnett, C.W., J. Am. Sta. Assn., Vol. 50 (1955) and Biometrics, Vol. 20 (1964).

Bartlett's Test	pp. 296-298	S&C
ANOVA	pp. 277-279	S&C
Dunnett's Test	pp. 1096-1121, 482	D
Kruskal-Wallis	pp. 114-116	H&W
Summed Rank Test (Dunn)	pp. 131	H&W
Regression Analysis		
Trend	pp. 149-152	S&C
Lack of Fit	pp. 160-164	S&C
Jonckheere's Statistic	pp. 120-123	H&W

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Q-3
Appendix Q (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Methodology and References (cont.)

Statistical Analysis of Data (cont.)

Method B^b:

Statistical analysis of incidence data was performed using contingency tables. First, a standard chi-square analysis was performed to determine if the proportion of incidences differed between the groups tested. In keeping with standard statistical practice, if any one cell had an expected value of less than 5, this step was not reported. Next, each treatment group was compared to the control group using a 2x 2 Fisher Exact test and the significance level was corrected via the Bonferroni inequality to assure an overall test of the stated significance level. Thirdly, Armitage's test for linear trend in the dosage groups was performed.

-
- ^bChi-square: Snedecor, G.W., and Cochran, W.G., Statistical Methods, 6th ed., Iowa State Univ. Press. Ames, Iowa, 1971, pp. 250-253.
Fisher Exact Test: Bradley, J.V., Distribution Free Statistical Tests, Prentice Hall Englewood Cliffs, N.J., 1968, pp. 195-203.
Bonferroni Inequality: Miller, R.G., Jr., Simultaneous Statistical Inference McGraw-Hill Book Co., N.Y. 1966, p. 15.
Armitage's Test: Armitage, P., "Tests for Linear Trends in Proportions and Frequencies", Biometrics, Sept. 1955, pp. 375-386.

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Appendix Q (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Methodology and References (cont.)

Statistical Analysis of Data (cont.)

Method CC:

ANALYSIS OF LITTER DATA

The following analysis is derived when data are taken from all pups in a litter, and each litter was delivered and weaned by a dam who is associated with a specified treatment group. The data must be interval-type data (including data formed by ratios which may be transformed before analysis).

Statistical analysis will be done using a nested analysis of variance (Ref. pg. 201, Gill) with pups nested within litters and litters nested within treatment groups. Statistical significance of differences between groups will be determined by the F ratio of treatment mean squares to litter mean squares. If significant differences are indicated, treatment groups will be compared to control using the least significant difference test (Ref. pg. 178, Gill).

The F test will be conducted at the 5% and 1% of significance, the least significant difference only at the level of greatest significance.

Reference:

Gill, J. L. Design and Analysis of Experiments in the Animal and Medical Science, Vol. I, the Iowa State University Press, Ames, Iowa, 1978.

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Appendix Q (cont.)
An Inhalation Female Fertility Study
with Benzene in Rats

Methodology and References (cont.)

Statistical Analysis of Data (cont.)

Statistical Notations

<u>Symbol</u>			<u>Statistical Statement</u>
<u>No Sig</u>	<u>p<0.05</u>	<u>p<0.01</u>	<u>Absolute Data</u>
A-	A	A+	No statistical differences among the means (parametric ANOVA).
	*	**	Significantly different from control (Dunnett's).
K-			No statistical differences among the means (Kruskal-Wallis, nonparametric).
H-	H+		A nested analysis of variance Q-4.
	††	††	Significantly different from control LSD test.
			<u>Incidence Data</u>
	#	##	Significantly different from control (Fisher Exact Test).

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79-2425

Appendix R
An Inhalation Female Fertility Study
with Benzene in Rats

PERSONNEL		
DEPARTMENT/TITLE	NAME	DEGREE
STUDY DIRECTOR	Raymond E. Schroeder	M.S.
STUDY MONITOR/REPORT WRITER	Loretta Bshasso	B.A.
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MANAGER	Raymond E. Schroeder	M.S.
SUPERVISOR	Maureen Kenny	B.A.
TECHNICIAN-IN-CHARGE	Barbara Bernard	-
VETERINARIAN	Fred A. Hines	D.V.M.
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DATA LOGISTICS		
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QUALITY ASSURANCE		
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YZ0014532