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Vinylidene Chloride (VDC) in the Drinking
Water of Rats

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C. G. Humiston, S. B. McCollister
and J. F. Quast

reviewed by

J. M. Norris and B. A. Schwetz

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Toxicology Research Laboratory
Health and Environmental Research
Dow Chemical U.S.A.
Midland, Michigan 48640

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RESULTS OF A 90-DAY STUDY INCORPORATING VINYLIDENE
CHLORIDE (VDC) IN THE DRINKING WATER OF RATS

C. G. Humiston, S. B. McCollister and J. F. Quast

SUMMARY

Groups of male and female rats ingested vinylidene chloride (VDC) in their drinking water at concentrations of 0, 60, 100 or 200 ppm for 90 days. These concentrations were equivalent to the respective average doses of 0, 6, 10 or 19 mg VDC/kg body weight/day for male rats; and 0, 8, 13 or 26 mg/kg/day for female rats. Body weights, food consumption and water consumption were recorded, and the rats were observed for signs of toxicity. Clinical parameters were evaluated just prior to termination of the study and at intervals during the treatment period; these included hematological studies, urinalyses, and determinations of blood urea nitrogen, serum alkaline phosphatase activity, serum glutamic pyruvic transaminase activity, and non-protein free sulfhydryl content in liver and kidney. Gross examination was conducted at necropsy after 90 days on experiment; organ weights were recorded and tissues were saved for histopathological evaluation.

Microscopic examination of the livers from some of the rats ingesting 200 ppm VDC in their drinking water revealed minimal changes characterized by an increase in cytoplasmic vacuolation of occasional individual hepatocytes. None of the other parameters examined revealed any evidence of toxicological effects associated with the ingestion of 60, 100 or 200 ppm VDC by male and female rats in their drinking water.

INTRODUCTION

A 90-day study incorporating vinylidene chloride (VDC) in the drinking water of rats, reported herein, is one of a series of toxicological investigations being conducted to aid in the evaluation of the safety of VDC for food packaging applications. Vinylidene chloride was administered to rats in their drinking water in preference to the feed since the concentration could be held relatively constant in water during a 24 hour period whereas the material was rapidly lost from the feed. This study was financed by member companies of the Manufacturing Chemists Association and was conducted in the Toxicology Research Laboratory, Health and Environmental Research, The Dow Chemical Company.

EXPERIMENTAL PROCEDURES

Test Material. The test material used in this study is described as follows:

chemical name: vinylidene chloride

synonym: 1,1-dichloroethylene, VDC

molecular formula: $C_2H_2Cl_2$

structural formula: $CH_2=CCl_2$

molecular weight: 96.95

description: clear, colorless liquid having
a characteristic sweet smell

The VDC samples were aliquots of production material, minimum purity 99.5%, obtained from The Dow Chemical Company, Freeport, Texas. The specifications of this production material were as follows: acetylenes, 25 ppm maximum; acidity as HCl, 15 ppm maximum; water, 75 ppm maximum; peroxides, 25 ppm maximum; color APHA, 30 maximum; iron, 0.5 ppm maximum; specific gravity at 25/25°C, 1.202-1.212; polymer content, free, clear; inhibitor MEHQ (monomethylether of hydroquinone), 180-220 ppm; di-N-propylamine, 0.1 ppm maximum. Since the vinylidene chloride used to prepare various copolymers for food packaging applications is distilled to remove the inhibitor MEHQ, this study was conducted on distilled VDC having residual MEHQ in the range of 1-5 ppm.

Four of the samples were analyzed for impurities, using a gas chromatographic method. Results are as follows:

<u>Impurity</u>	<u>Concentration (ppm) in Sample:</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Vinyl bromide	4	ND	ND	ND
Vinyl chloride	50	4	3	ND
trans 1,2-dichloroethene	1700	169	162	138
cis 1,2-dichloroethane	680	53	52	24
1,1,1-trichloroethane	60	2	2	ND
1,1,2-trichloroethane	48	ND	ND	ND
MEHQ	2	ND	ND	ND

ND - not detected

The sample was kept at -15 to -20°C at all times except during preparation of the water solutions.

General Design. Sprague-Dawley, Spartan substrain, SPF-derived rats, 6-7 weeks old, were used in this study. Treatment groups consisted of 10 rats of each sex randomly selected to receive concentrations of 0, 60, 100 or 200 ppm VDC in their drinking water for 90 days. Each of these rats was housed in a suspended wire-bottom cage with a rat on a two-year study on VDC that was initiated at the same time and at the same treatment

concentrations as this 90-day study. Since the rats were housed together, data on food and water consumption, which are recorded for each cage, include the 10 rats/sex/group on the two-year study. These later rats were not used for any of the other parameters measured in this 90-day study. Additional groups of 8 rats of each sex at each treatment level were set up for interim sulfhydryl determinations.

Food (ground laboratory chow, Ralston-Purina Co.) and water were available ad libitum. Water was supplied from glass bottles with plastic screw caps fitted with stainless steel sipper tubes containing stainless steel balls. The bottles were emptied and refilled daily from freshly prepared stock solutions. Because of the volatility of VDC, the concentrations of the stock solutions were made up to exceed the nominal concentrations so that the mean levels of VDC during the 24 hours would be at least as high as the nominal treatment concentrations of 60, 100 and 200 ppm.

Analysis of Drinking Water. Analyses for VDC content were conducted on 16 of the daily preparations of water solutions using a gas chromatograph under the following conditions: Column, 1/4" Porapak Q, 80-100, 6 feet; oven temperature, 180°C; detector, dual flame ionization; carrier gas, helium, flow rate, 20 ml/minute; attenuation, 80; sample volume, 4.2-4.5 μ l (normalized to 1 μ l). The chromatograms obtained were compared with those from standard solutions of vinylidene chloride to determine the concentrations in the test solutions.

The means $\pm$ S.D. of these 16 analyses were 68 $\pm$ 13 ppm, 106 $\pm$ 22 ppm, and 220 $\pm$ 35 ppm for the respective nominal treatment concentrations of 60, 100 and 200 ppm VDC.

Observations and Records. The rats were observed twice weekly for signs of toxicity. Food consumption was recorded twice weekly and the average amount consumed/rat/day was calculated. Water consumption was measured on 14 of the first 29 days of the study and twice weekly during months 2 and 3. These measurements were made by weighing the water bottles when filled and again before being emptied 24 hours later. Body weights were recorded weekly.

Clinical Studies. Hematological studies, including determinations of packed cell volume (PCV), erythrocyte counts (RBC), hemoglobin concentrations (Hgb), and total and differential leucocyte counts (WBC), were conducted on 5 rats/sex/group on days 30 and 86 of treatment. Urine samples were obtained from these same 5 rats/sex/group on days 30, 62 and 85 for urinalyses that included determinations of specific gravity, pH, sugar, protein, ketones, occult blood and bilirubin.

Clinical chemistry studies were conducted on blood collected orbitally from 5 rats/sex/group after 30 days of treatment and on blood obtained upon decapitation of the 10 rats/sex/group necropsied after 90 days of treatment. The studies included determinations of blood urea nitrogen (BUN), serum alkaline phosphatase activity (AP) and serum glutamic pyruvic transaminase activity (SGPT). Non-protein free sulfhydryl content was measured in the livers and kidneys of 2 rats/sex/group killed on days 1, 3, 9 and 31, and 2 of the 10 rats/sex/group necropsied after 90 days on test.

Pathology. At the end of the 90-day treatment period, the 10 rats of each sex per group were fasted overnight, weighed, and killed by decapitation for gross examination. The brain, heart, liver, kidneys and testes were removed and weighed. Representative portions of the following tissues were preserved in 10% buffered formalin: adrenal glands, parathyroid glands, thyroid glands, heart, aorta, sternum, bone marrow, kidneys, urinary bladder, prostate, accessory sex glands, epididymides, testes, ovaries, urethra, uterus, brain (3 levels), pituitary gland, spinal cord, peripheral nerve (sciatic), large intestine, small intestine (3 levels), esophagus, salivary gland, stomach, pancreas, liver, lung, larynx, trachea, lymph nodes (mediastinal and mesenteric), spleen, thymus, skeletal muscle, mammary tissue and any grossly abnormal tissue. Both eyes of each rat were examined using a glass microscope slide technique under fluorescent illumination and were preserved in Zenker's fixative. All of the tissues, except sternum and bone marrow, from five rats of each sex in the control and 200 ppm treatment groups, were prepared by routine histologic procedures. In addition, sections of liver and kidney from 5 rats per sex from the remaining treatment levels were prepared.

The sections were stained with hematoxylin and eosin and were examined microscopically.

Statistical Evaluation. Hematology, clinical chemistry, food consumption, water consumption, body weight and organ weight data were evaluated statistically by an analysis of variance and Dunnett's test (Steel and Torrie, 1960).¹ The level of significance selected for all cases was $p < 0.05$.

¹Steel, R.C.D. and Torrie, H. H. (1960), Principles and Procedures of Statistics, McGraw-Hill Book Company, Inc., New York, pages 101-112.

RESULTS AND DISCUSSION

General Observations. None of the rats exhibited any signs of toxicity throughout the study. All of the rats survived the 90-day experimental period.

Body Weights. Body weight gains were similar for groups of treated rats and controls, with no dose-related differences to suggest an effect related to treatment (Table 1). Individual body weights are given in Appendix Tables A-1 and A-2.

Food Consumption. Food consumption data are summarized in Table 2. Individual values are presented in Appendix Tables A-3 and A-4. Average values for all groups of treated male rats were essentially the same as the control means. The mean food consumption values of all groups of female rats ingesting VDC in their drinking water were slightly lower than the control values. These decreases were sporadic throughout the 90-day period and were not dependent upon dose.

Water and Chemical Consumption. The mean daily water consumption of male and female rats ingesting 60, 100 or 200 ppm VDC in their drinking water was similar

to the amounts of untreated water consumed by the control rats. Water consumption data are summarized in Table 3. Individual values are presented in Appendix Tables A-5 and A-6.

The average doses of VDC, calculated weekly from mean body weight and water consumption data, for groups of male rats receiving 60, 100 or 200 ppm VDC in their drinking water were 5.9 ± 0.6 , 10.0 ± 1.2 or 19.3 ± 2.7 S.D. mg/kg/day, respectively. Comparable doses (mean $\pm$ S.D.) for females were 7.5 ± 0.4 , 12.6 ± 1.1 or 25.6 ± 2.4 mg/kg/day.

Clinical Studies

Hematology. Results of hematologic studies are summarized in Table 4. Individual values are presented in Appendix Tables A-7 and A-8. None of the parameters evaluated showed any differences between control rats and those receiving VDC in their drinking water that could be associated with treatment.

Urinalyses. Urinalyses conducted after 30, 62 and 85 days of treatment gave similar values for treated and control rats. These results are summarized in Table 5, and individual values are given in Appendix Tables A-9 and A-10.

Clinical Chemistry. Determinations of BUN, and AP and SGPT activity, summarized in Table 6, revealed a few random statistically significant differences between groups of treated and control rats. The only one of these differences that was probably associated with treatment is the increase in mean SGPT activity of the female rats that had ingested 200 ppm VDC for 30 days. However, the magnitude of the increase is not great enough to be considered toxicologically significant. No such increase was observed in the values obtained after 90 days. BUN, and AP and SGPT activities for individual rats are presented in Appendix Table A-11.

Sulphydryl Determinations. Results of determinations of non-protein free sulphydryl values in kidney and liver are presented in Table 7. The data do not show any consistent, dose-related differences that would indicate an effect associated with treatment.

Pathology. Terminal body weights, organ weights, and organ/body weight ratios are summarized in Table 8. Values for individual rats are presented in Appendix Tables A-12 and A-13. There were no dose-related differences between treated and control rats for any of

the absolute or relative organ weights. The only statistically significant variation was a decrease in mean kidney/body weight ratio of the group of male rats receiving the lowest concentration of VDC.

Gross examination at necropsy revealed no changes that were considered relatable to treatment (Table 9). Results of histopathologic examination are presented in Tables 10 and 11. The livers of one of five male rats and three of five female rats maintained on water containing 200 ppm VDC showed minimal changes characterized by an increase in cytoplasmic vacuolation of occasional individual hepatocytes. These changes were not observed in the livers of control rats or the rats having ingested the lower concentrations of VDC. The remaining histopathologic observations were comparable in the treated and control rats and are considered to be spontaneous in occurrence.

CONCLUSIONS

Results of this study indicate that male and female rats may ingest water containing at least 100 ppm VDC for a period of 90 days without untoward effects on any of the parameters evaluated. Effects observed in rats ingesting water containing 200 ppm VDC for 90 days were limited to minimal reversible changes in the liver.

Table 1

MEAN BODY WEIGHTS OF MALE AND FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a

ppm VDC in water	Days on Test													
	0	8	13	20	27	34	41	48	55	62	69	76	83	89
<u>MALES</u>														
0	310±8	341±15	364±19	392±22	405±27	411±32	432±35	435±35	453±35	455±38	454±33	442±38	467±40	461±59
60	310±10	340±18	367±19	390±19	402±22	405±23	425±23	436±26	451±29	463±29	476±30	466±28	488±29	486±44
100	310±20	332±23	356±27	378±32	393±39	391±35	412±36	421±40	440±43	446±43	456±44	445±48	470±52	475±49
200	305±9	335±13	360±18	385±19	398±21	407±24	428±27	438±30	458±32	461±30	470±30	459±36	474±35	487±36
<u>FEMALES</u>														
0	213±7	225±9	240±11	251±14	257±14	258±15	271±16	275±17	283±18	283±20	281±27	270±21	297±21	290±26
60	225±9*	232±9	248±10	260±13	263±14	266±13	275±13	276±15	284±13	286±15	292±14	294±16*	296±12	302±12
100	225±8*	235±8*	242±10	261±9	264±10	270±13	278±12	282±16	284±14	289±15	294±16	284±16	299±15	302±18
200	226±6*	239±9*	253±11*	264±13	269±13	274±15*	283±16	287±16	292±19	300±16	304±17*	291±18*	308±19	313±17

^aWeights are in grams, mean ± SD, for 10 rats/group. See Appendix Tables A-1 and A-2 for individual values.

*Significantly different from controls by Dunnett's test, p<0.05.

Table 2

MEAN FOOD CONSUMPTION (GRAMS/RAT/DAY) OF MALE AND FEMALE RATS MAINTAINED
ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a

Days on test	ppm VDC in Drinking Water							
	Males				Females			
	0	60	100	200	0	60	100	200
0-1	26±2	27±1	26±2	26±1	20±2	20±1	20±2	19±3
8-12	25±1	26±1	24±2	25±2	20±2	18±1	18±1*	18±1*
13-15	26±3	26±2	24±2	25±3	19±2	20±2	22±3*	18±2
16-19	26±2	26±1	25±2	26±2	19±1	18±1	19±1	19±1
20-22	26±2	26±1	24±2	26±2	20±2	19±1	19±1	19±1
23-26	26±2	26±1	24±2	25±1	20±1	19±2	19±1	19±1
27-29	25±2	26±4	24±3	24±1	18±6	18±2	18±2	18±1
30-33	25±3	26±5	24±2	24±1	19±0	18±1	18±1	18±1
34-36	25±2	25±2	24±3	24±1	20±2	17±1*	17±1*	18±1*
37-40	27±2	26±1	25±2	25±1	23±3	19±2*	19±1*	19±1*
41-43	27±6	26±4	25±2	25±1	23±9	14±1*	17±3*	18±1
44-47	26±2	27±2	29±7	26±1	18±5	22±6	22±3	22±1
48-50	26±2	26±2	25±2	25±1	24±8	19±1	18±1*	20±1
51-54	25±3	27±1	27±2	26±1	21±2	21±4	21±2	20±1
55-57	28±6	26±1	26±10	26±1	23±3	19±1*	19±2*	20±2*
58-61	22±8	27±1*	26±2	26±1	22±3	20±1	20±2	21±1
62-64	25±5	27±1	26±4	26±2	21±2	19±2	20±1	20±1
65-68	26±2	26±2	24±2	24±5	22±2	19±1*	20±2	20±2
69-71	26±2	27±4	26±4	25±2	22±2	21±3	20±2*	20±1
72-75	29±2	28±1	28±2	27±2	26±3	19±1*	22±2*	22±1*
76-78	22±1	23±1	22±2	23±2	20±3	19±2	18±2	18±2
79-82	25±4	25±1	25±2	25±2	21±2	19±1	20±1	20±1
83-84	24±3	26±2	25±2	23±3	20±2	18±2	19±1	19±1
Mean±S.D. ^b	26±2	26±1	25±2	25±1	21±2	19±2*	19±1*	19±1*

^aValues are means ± SD of 20 rats/group. See Appendix Tables A-3 and A-4 for individual values.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

^bTime-weighted mean±S.D. of the group values.

Table 3

MEAN WATER CONSUMPTION (GRAMS/RAT/DAY) OF MALE AND FEMALE RATS MAINTAINED
ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a

Day on test	ppm VDC in Drinking Water							
	Males				Females			
	0	60	100	200	0	60	100	200
0	43±5	41±5	40±3	42±2	35±8	33±7	31±2	31±4
1	42±4	43±2	43±3	43±3	30±7	34±2	34±5	35±4
2	45±8	43±4	44±3	42±3	34±6	33±4	34±4	35±2
8	42±5	44±7	41±4	41±4	32±9	32±4	32±3	32±3
9	42±6	41±3	38±3	41±2	33±11	32±2	33±3	32±3
10	37±5	41±4	41±9	41±4	35±10	33±3	32±3	33±4
11	43±3	41±3	40±3	43±6	34±4	33±2	30±2	33±8
12	37±5	41±3	39±3	38±6	33±5	32±3	29±6	32±3
13	44±9	39±4	37±4*	44±6	34±6	31±4	35±7	31±4
15	36±5	38±10	34±4	37±4	27±4	27±4	27±4	30±4
19	40±5	42±4	37±3	42±4	31±4	33±8	31±2	30±3
22	40±5	41±4	39±4	41±3	35±6	31±5	34±4	32±5
26	36±13	42±8	38±2	39±2	35±4	33±4	33±4	32±3
29	36±7	40±4	40±9	40±6	30±5	36±14	30±4	31±2
33	39±4	37±6	36±3	37±4	30±5	32±4	32±4	34±3
36	42±5	42±4	40±3	40±4	36±4	32±3	32±6	35±4
40	43±6	43±2	47±10	45±4	35±6	32±3	32±3	33±3
43	44±12	42±4	43±2	42±4	33±6	36±5	36±3	34±4
47	37±4	36±4	30±2*	31±3*	32±4	29±5	30±3	28±6
50	42±5	44±4	44±4	40±5	36±6	35±4	33±5	44±11
54	43±5	45±6	46±7	42±7	36±6	38±4	35±7	40±6
57	44±6	44±5	40±3	40±5	37±4	33±4	35±4	39±4
61	44±4	40±5	38±4*	38±7	41±3	35±3*	35±5*	37±5
64	35±12	43±7	41±3	41±7	37±4	35±4	36±4	35±5
68	40±6	42±5	42±4	39±6	40±16	36±3	36±4	38±5
71	42±3	41±3	47±25	40±8	38±4	37±5	35±4	36±9
75	52±5	47±3	49±5	43±10*	47±8	38±7*	44±5	46±5
78	45±6	36±4*	40±3	40±6	----	----	----	----
82	44±6	44±4	41±3	39±9	39±5	37±3	36±4	36±5
85	39±7	43±4	41±4	38±9	38±12	37±4	37±7	39±4
Mean±S.D.	41±4	42±2	40±4	40±3	35±4	34±3	33±3	34±4

^aValues are means ± SD of 20 rats/group of the water consumed on the indicated day.
See Appendix Tables A-5 and A-6 for individual data.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

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Table 4

MEAN HEMATOLOGIC VALUES FOR MALE AND FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a

ppm VDC in water	PCV Percent		RBC $\times 10^6/\text{mm}^3$		Hgb g/100ml		WBC $\times 10^3/\text{mm}^3$		WBC Differential Count (%)									
									Neut		Lymph		Mono		Eosin		Baso	
	30 ^b	86	30	86	30	86	30	86	30	86	30	86	30	86	30	86	30	86
MALES																		
0	52±2	54±4	7.49±0.35	8.33±0.51	16.9±0.6	17.4±1.2	15.2±1.4	12.1±1.5	12	9	85	91	2	2	1	1	0	0
60	51±2	53±2	7.72±0.28	8.12±0.79	17.1±0.3	17.2±0.9	14.5±2.1	9.7±2.3	12	13	86	81	0	4	2	1	0	0
100	54±3	53±1	7.76±0.49	8.45±0.21	17.7±0.9	17.0±0.4	14.4±2.1	11.5±2.5	9	12	90	83	0	3	1	1	0	0
200	52±2	53±1	7.70±0.19	8.35±0.38	17.2±0.6	17.5±0.6	15.7±2.9	12.9±0.8	6	10	93	86	0	3	1	2	0	0
FEMALES																		
0	50±2	47±1	7.79±0.40	7.55±0.36	16.6±0.8	16.0±0.6	15.9±2.1	9.4±1.0	10	9	88	85	1	4	1	2	0	0
60	51±3	51±2*	7.62±0.57	7.53±0.41	16.6±0.7	17.1±0.6*	14.3±2.6	12.4±2.4	11	12	87	82	1	4	1	2	0	0
100	50±2	48±3	7.56±0.37	7.72±0.52	16.3±0.5	16.5±0.8	18.4±1.5	13.4±2.3	8	8	89	86	1	5	1	2	1	0
200	51±1	47±1	7.84±0.29	7.51±0.32	16.8±0.3	16.1±0.3	16.1±2.3	9.1±2.0	12	10	87	84	1	4	0	2	0	0

^aValues are mean ± SD of 5 rats/group. See Appendix Tables A-7 and A-8 for individual values.^bDays on test*Significantly different from controls by Dunnett's test, $p < 0.05$.

Table 5

SUMMARY OF URINALYSES ON MALE AND FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a

Days on test	ppm VDC in water	Specific gravity mean $\pm$ SD	pH Range	Protein Range	()=No. of rats affected			
					Sugar	Ketones	Occult Blood	Bilirubin
MALES								
30	0	1.047 $\pm$ 0.007	6.0-6.5	+1 to +2	neg (5)	neg (5)	neg (5)	neg (5)
	60	1.049 $\pm$ 0.015	6.0-6.5	tr to +2	neg (5)	neg (5)	neg (5)	neg (5)
	100	1.058 $\pm$ 0.007	6.0-6.5	+2 to +3	neg (5)	neg (4), tr (1)	neg (4), mod (1)	neg (5)
	200	1.060 $\pm$ 0.009	6.0-6.0	+2 to +3	neg (5)	neg (3), tr (2)	neg (5)	neg (5)
62	0	1.044 $\pm$ 0.010	6.0-6.5	tr to +1	neg (5)	neg (4), tr (1)	neg (5)	neg (5)
	60	1.049 $\pm$ 0.011	6.0-6.0	tr to +3	neg (5)	neg (5)	neg (5)	neg (5)
	100	1.049 $\pm$ 0.010	6.0-6.5	+1 to +3	neg (5)	neg (4), tr (1)	neg (4), sm (1)	neg (5)
	200	1.050 $\pm$ 0.012	6.0-7.0	+1 to +3	neg (5)	neg (3), tr (2)	neg (5)	neg (5)
85	0	1.052 $\pm$ 0.010	6.0-7.0	+1 to +2	neg (5)	neg (1), tr (1), sm (3)	neg (5)	neg (5)
	60	1.050 $\pm$ 0.017	6.0-7.0	+2 to +3	neg (5)	neg (1), tr (1), sm (3)	neg (4), sm (1)	neg (5)
	100	1.050 $\pm$ 0.009	5.5-6.5	+1 to +3	neg (5)	neg (4), tr (1)	neg (5)	neg (5)
	200	1.044 $\pm$ 0.018	6.0-6.5	+2 to +3	neg (5)	neg (4), sm (1)	neg (4), sm (1)	neg (5)
FEMALES								
30	0	1.048 $\pm$ 0.013	6.0-7.0	+1 to +3	neg (5)	neg (5)	neg (5)	neg (5)
	60	1.038 $\pm$ 0.014	5.5-7.5	tr to +2	neg (5)	neg (5)	neg (5)	neg (5)
	100	1.047 $\pm$ 0.015	6.0-6.5	tr to +3	neg (5)	neg (5)	neg (5)	neg (5)
	200	1.049 $\pm$ 0.015	6.0-8.0	+1 to +3	neg (5)	neg (5)	neg (5)	neg (5)
62	0	1.034 $\pm$ 0.008	6.0-7.0	tr to +3	neg (5)	neg (5)	neg (5)	neg (5)
	60	1.045 $\pm$ 0.013	6.0-6.0	tr to +3	neg (5)	neg (3), tr (2)	neg (5)	neg (5)
	100	1.035 $\pm$ 0.012	6.0-7.0	tr to +1	neg (5)	neg (5)	neg (5)	neg (5)
	200	1.041 $\pm$ 0.013	6.0-7.0	tr to +3	neg (5)	neg (4), tr (1)	neg (5)	neg (5)
86	0	1.039 $\pm$ 0.015	6.0-7.5	tr to +3	neg (5)	neg (2), tr (3)	neg (5)	neg (5)
	60	1.047 $\pm$ 0.015	6.0-7.5	tr to +3	neg (5)	neg (1), tr (3), sm (1)	neg (5)	neg (5)
	100	1.043 $\pm$ 0.006	6.0-6.5	+1 to +2	neg (5)	neg (3), tr (2)	neg (5)	neg (5)
	200	1.043 $\pm$ 0.012	6.0-7.0	tr to +2	neg (5)	neg (2), tr (2), sm (1)	neg (5)	neg (5)

^aGroups consisted of 5 rats/sex. See Appendix Tables A-9 and A-10 for individual data.

Table 6

MEAN CLINICAL CHEMISTRY VALUES FOR MALE AND FEMALE RATS MAINTAINED
ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a

Days on test	ppm VDC in water	Males			Females		
		BUN mg %	AP mU/ml	SGPT mU/ml	BUN mg %	AP mU/ml	SGPT mU/ml
30	0	28±1	--- ^b	49±5	26±2	--- ^b	43±4
	60	27±2	---	47±3	21±1	---	45±5
	100	26±1	---	49±3	25±2	---	46±4
	200	25±2*	---	50±6	28±5	---	56±9*
90	0	20±3	125±21	42±6	20±4	94±25	28±4
	60	19±4	104±25	34±7*	20±3	78±10	25±3
	100	18±1	114±16	35±6	20±2	83±16	25±3
	200	20±3	122±24	35±5*	20±3	95±31	28±4

^aValues are means ± SD of 5 rats/group at 30 days and 10 rats/group at 90 days.
See Appendix Table A-11 for individual values.

^bAP values at 30 days were not analyzed statistically; blood samples were from
non-fasted rats, which gave some AP values that were too high to measure.
Individual values are given in Appendix Table A-11.

*Significantly different from controls by Dunnett's test $p < 0.05$.

Table 7

SULPHYDRYL VALUES FROM KIDNEY AND LIVER OF MALE AND FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 1, 3, 9, 31 OR 90 DAYS

ppm VDC in water	Kidney									
	Day 1	Day 3	Day 9	Day 31	Day 90	Day 1	Day 3	Day 9	Day 31	Day 90
	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg
MALES										
0	74-3855	3.37	74-3853	4.19	74-3851	4.08	74-3849	3.83	74-3471	3.13
	74-3856	2.99	74-3854	3.25	74-3852	3.48	74-3850	3.80	74-3473	2.94
50	74-3847	3.22	74-3845	3.33	74-3843	3.68	74-3841	3.73	74-3545	3.12
	74-3848	3.18	74-3846	4.12	74-3844	4.03	74-3842	3.71	74-3547	3.50
100	74-3839	3.24	74-3837	3.81	74-3835	3.11	74-3833	3.84	74-3511	2.52
	74-3840	3.07	74-3838	3.84	74-3836	3.95	74-3834	4.30	74-3513	2.72
200	74-3831	3.10	74-3829	3.94	74-3827	3.90	74-3825	4.06	74-3497	3.13
	74-3832	3.30	74-3830	3.75	74-3828	4.05	74-3826	4.03	74-3499	3.27
FEMALES										
0	74-3823	4.27	74-3821	4.88	74-3819	4.72	74-3817	4.65	74-3551	3.99
	74-3824	3.58	74-3822	4.35	74-3820	4.94	74-3818	4.80	74-3553	3.51
50	74-3815	3.90	74-3813	4.76	74-3811	4.42	74-3809	4.80	74-3611	3.61
	74-3816	3.74	74-3814	5.26	74-3812	4.73	74-3810	5.07	74-3613	2.98
100	74-3807	4.27	74-3805	4.28	74-3803	4.48	74-3801	5.49	74-3591	3.27
	74-3808	5.97	74-3806	4.80	74-3804	4.83	74-3802	5.10	74-3593	3.45
200	74-3799	4.16	74-3797	4.80	74-3795	5.09	74-3793	5.35	74-3571	3.17
	74-3800	4.16	74-3798	4.80	74-3796	4.72	74-3794	5.26	74-3573	2.10
ppm VDC in water	Liver									
	Day 1	Day 3	Day 9	Day 31	Day 90	Day 1	Day 3	Day 9	Day 31	Day 90
	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg	Animal No.	moles $\times 10^{-9}$ /mg
MALES										
0	74-3855	6.77	74-3853	7.72	74-3851	7.01	74-3849	8.46	74-3471	5.88
	74-3856	7.37	74-3854	7.82	74-3852	7.26	74-3850	7.82	74-3473	4.76
50	74-3847	6.34	74-3845	8.50	74-3843	8.37	74-3841	7.71	74-3545	5.55
	74-3848	6.44	74-3846	8.05	74-3844	7.17	74-3842	8.46	74-3547	5.31
100	74-3839	7.50	74-3837	6.99	74-3835	6.80	74-3833	8.40	74-3511	6.44
	74-3840	6.82	74-3838	7.54	74-3836	7.59	74-3834	8.24	74-3513	5.13
200	74-3831	6.25	74-3829	6.56	74-3827	7.72	74-3825	7.91	74-3497	4.56
	74-3832	7.17	74-3830	7.12	74-3828	7.58	74-3826	8.44	74-3499	5.06
FEMALES										
0	74-3823	6.36	74-3821	7.85	74-3819	7.77	74-3817	7.40	74-3551	5.14
	74-3824	6.57	74-3822	7.72	74-3820	7.85	74-3818	7.48	74-3553	5.24
50	74-3815	6.99	74-3813	7.45	74-3811	8.04	74-3809	8.37	74-3611	4.01
	74-3816	6.20	74-3814	6.82	74-3812	7.54	74-3810	7.32	74-3613	5.12
100	74-3807	6.99	74-3805	7.50	74-3803	8.15	74-3801	7.50	74-3591	5.17
	74-3808	6.44	74-3806	7.15	74-3804	7.37	74-3802	7.76	74-3593	5.15
200	74-3799	6.66	74-3797	7.89	74-3795	7.30	74-3793	8.18	74-3571	5.15
	74-3800	6.31	74-3798	8.18	74-3796	7.79	74-3794	7.91	74-3573	3.92

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Table 8

MEAN TERMINAL BODY AND ORGAN WEIGHTS OF MALE AND FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a

ppm VDC in water	Terminal Body Wt., Starved, g	Organ weights (g and g/100g body weight)									
		Brain		Heart		Liver		Kidney		Testes	
		g	g/100g	g	g/100g	g	g/100g	g	g/100g	g	g/100g
MALE											
0	438±45	1.90±0.03	0.44±0.04	1.38±0.14	0.32±0.01	12.42±1.83	2.83±0.17	3.24±0.38	0.74±0.06	3.98±0.17	0.92±0.11
60	464±28	1.89±0.07	0.41±0.02	1.38±0.06	0.30±0.01	12.49±1.17	2.69±0.16	3.19±0.20	0.69±0.04*	3.92±0.16	0.85±0.06
100	448±47	1.87±0.09	0.42±0.05	1.34±0.16	0.30±0.02	12.29±2.01	2.73±0.18	3.36±0.41	0.75±0.04	3.99±0.30	0.90±0.09
200	458±35	1.87±0.07	0.41±0.03	1.40±0.13	0.30±0.02	12.39±1.11	2.70±0.15	3.27±0.21	0.71±0.04	3.89±0.23	0.85±0.10
FEMALE											
0	273±21	1.78±0.05	0.65±0.06	0.93±0.06	0.34±0.02	7.03±0.72	2.57±0.09	1.96±0.13	0.72±0.03		
60	267±30	1.80±0.06	0.68±0.10	0.97±0.05	0.37±0.06	7.27±0.38	2.76±0.43	1.88±0.35	0.71±0.18		
100	278±16	1.77±0.04	0.64±0.05	0.94±0.08	0.34±0.02	7.15±0.56	2.57±0.15	1.96±0.14	0.70±0.04		
200	288±17	1.78±0.07	0.62±0.04	0.96±0.05	0.34±0.02	7.48±0.66	2.59±0.17	2.05±0.13	0.71±0.03		

^aValues are mean ± SD for 10 rats/group. See Appendix Tables A-12 and A-13 for individual values.

*Significantly different from control by Dunnett's test, p<0.05.

SL 081942

TABLE 9

GROSS PATHOLOGIC FINDINGS IN MALE AND FEMALE RATS MAINTAINED ON
DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

<u>Pathologic Findings (Male)</u>	<u>ppm VDC in Drinking Water</u>			
<u>Gross Examination</u>	<u>0</u>	<u>60</u>	<u>100</u>	<u>200</u>
No visible lesion	2/10	5/10	4/10	5/10
Intestinal nematodiasis	7/10	4/10	6/10	5/10
Focal corneal cloudiness, unilateral	0/10	1/10	0/10	0/10
<u>Pathologic Findings (Female)</u>				
<u>Gross Examination</u>				
No visible lesion	5/10	2/10	1/10	4/10
Clear fluid in the uterine horns	2/10	2/10	2/10	3/10
Intestinal nematodiasis	5/10	9/10	9/10	6/10
Hematocyst in a strangulated piece of mesentery	0/10	0/10	0/10	1/10
Tumor of the left kidney	0/10	1/10	0/10	0/10

Data listed as number of rats affected/number of rats examined.

TABLE 10

HISTOPATHOLOGIC FINDINGS IN MALE RATS MAINTAINED ON
DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

<u>Microscopic Examination</u>	<u>ppm VDC in Drinking Water</u>			
	<u>0</u>	<u>60*</u>	<u>100*</u>	<u>200</u>
Focal chronic interstitial nephritis	1/5	0/5	0/5	0/5
Focal renal tubular collapse and atrophy	4/5	3/5	4/5	4/5
Focal granular cast within the renal tubules	1/5	0/5	0/5	0/5
Focal dilated renal tubules with eosinophilic casts	4/5	4/5	4/5	4/5
Focal chronic hepatitis	4/5	3/5	3/5	5/5
Minimal increase in cytoplasmic vacuolation of the hepatocytes	0/5	0/5	0/5	1/5
Chronic peribronchial lymphoid cellular infiltrate	5/5	0/0	0/0	5/5
Focal chronic tracheitis	2/5	0/0	0/0	1/5
Intestinal nematodiasis	1/5	0/0	0/0	3/5
Chronic focal myocarditis	2/5	0/0	0/0	2/5
Focal chronic pancreatitis	1/5	0/0	0/0	0/5
Focal chronic interstitial prostatitis	2/5	0/0	0/0	2/5

*Microscopic examination only of liver and kidneys in these groups.
Data listed as number of rats affected/number of rats examined.

SL 081944

TABLE 11

HISTOPATHOLOGIC FINDINGS IN FEMALE RATS MAINTAINED ON
DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

<u>Microscopic Examination</u>	<u>ppm VDC in Drinking Water</u>			
	<u>0</u>	<u>60*</u>	<u>100*</u>	<u>200</u>
Focal renal tubular collapse and atrophy	3/5	3/5	2/5	3/5
Focal chronic interstitial nephritis	3/5	1/5	0/5	1/5
Focal granular casts within the renal tubules	4/5	3/5	3/5	1/5
Focal dilated renal tubules with eosinophilic staining casts	3/5	4/5	2/5	3/5
Focal chronic hepatitis	4/5	3/5	3/5	4/5
Minimal increase in cytoplasmic vacuolation of the hepatocytes	0/5	0/5	0/5	3/5
Focal subacute to chronic interstitial pneumonia	1/5	0/0	0/0	0/5
Focal peribronchial lymphoid cellular infiltrate	5/5	0/5	0/5	4/5
Focal chronic tracheitis	1/5	0/0	0/0	0/5
Intestinal nematodiasis	1/5	0/0	0/0	0/5
Focal chronic pancreatitis	1/5	0/0	0/0	2/5
Focus of mesenteric fat necrosis	0/5	0/0	0/0	1/5

*Microscopic examination only of liver and kidneys in these groups.
Data listed as number of rats affected/number of rats examined.

APPENDIX

SL 081946

Table A-1

INDIVIDUAL AND MEAN BODY WEIGHTS IN GRAMS OF MALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	Days on Test													
		0	8	13	20	27	34	41	48	55	62	69	76	83	89
0	74-3471	302	334	360	381	378	386	407	397	416	410	413	402	436	427
	74-3473	302	329	336	372	387	380	395	400	413	421	425	408	425	415
	74-3475	309	330	348	367	377	381	394	400	423	422	423	411	433	426
	74-3477	307	317	338	364	372	375	394	399	420	417	415	404	423	345
	74-3479	323	368	376	424	447	466	492	496	514	526	504	522	547	551
	74-3481	312	350	385	410	428	434	455	461	474	475	463	441	467	472
	74-3483	313	357	388	422	435	445	466	468	483	491	494	476	506	515
	74-3485	300	335	360	395	411	418	447	453	470	473	473	456	489	491
	74-3487	312	340	372	391	396	400	422	428	446	447	458	442	457	472
	74-3489	322	348	377	396	417	429	448	452	466	467	467	454	484	493
	MEAN±SD	310±8	341±15	364±19	392±22	405±27	411±32	432±35	435±35	453±35	455±38	454±33	442±38	467±40	461±59
50	74-3531	300	339	369	400	407	393	439	452	428	473	487	469	493	488
	74-3533	306	334	357	385	392	400	419	434	448	467	479	479	474	503
	74-3535	317	361	392	419	430	442	453	465	498	500	512	500	534	538
	74-3537	331	371	403	421	448	447	468	481	501	512	530	520	540	552
	74-3539	298	317	343	374	385	385	407	418	439	438	455	442	473	482
	74-3541	308	331	354	371	377	389	411	411	433	437	449	437	461	463
	74-3543	315	353	374	402	409	413	436	456	473	486	496	482	505	504
	74-3545	304	318	349	373	384	384	402	410	422	440	448	440	457	459
	74-3547	312	339	369	383	395	399	410	412	435	440	454	447	479	473
	74-3549	305	332	355	375	391	397	406	416	429	435	450	447	468	395
	MEAN±SD	310±10	340±18	367±19	390±19	402±22	405±23	425±23	436±26	451±29	463±29	476±30	466±28	488±29	486±44
100	74-3511	318	343	369	392	399	400	418	435	455	461	466	457	478	488
	74-3513	350	375	413	440	456	462	482	500	522	536	549	544	581	577
	74-3515	289	316	340	357	376	381	399	406	415	430	438	425	451	456
	74-3517	285	295	324	334	346	344	360	370	388	398	409	387	402	422
	74-3519	319	340	366	390	456	404	433	442	465	453	471	468	492	501
	74-3521	298	320	341	366	378	383	408	417	437	440	451	430	453	452
	74-3523	292	316	336	359	367	374	394	402	417	416	422	414	439	443
	74-3525	319	332	341	362	361	365	393	391	407	416	423	411	434	434
	74-3527	323	354	384	415	423	434	454	465	490	498	507	498	524	529
	74-3529	311	326	350	361	366	367	381	384	401	410	421	415	442	448
	MEAN±SD	310±20	332±23	356±27	378±32	393±39	391±35	412±36	421±40	440±43	446±43	456±44	445±48	470±52	475±49
200	74-3491	301	332	358	384	399	399	416	417	432	428	429	409	433	430
	74-3493	303	325	355	376	379	388	406	402	419	426	440	420	450	449
	74-3495	319	340	369	388	403	415	430	447	467	466	465	455	480	477
	74-3497	312	348	377	411	419	428	453	469	493	491	507	502	523	520
	74-3499	315	338	335	382	404	409	428	434	458	461	473	463	480	475
	74-3501	291	335	368	382	397	409	438	453	473	477	477	440	499	504
	74-3503	308	345	376	405	419	432	453	462	488	491	500	501	425	529
	74-3505	312	346	374	391	412	429	453	469	490	491	505	505	516	530
	74-3507	297	338	362	392	398	413	433	445	465	471	478	472	491	503
	74-3509	295	302	325	340	348	352	367	377	399	408	426	427	438	451
	MEAN±SD	305±9	335±13	360±18	385±19	398±21	407±24	428±27	438±30	458±32	461±30	470±30	459±36	474±35	487±36

There were no significant differences between treated and control groups by Dunnett's test, $p < 0.05$.

Table A-2

INDIVIDUAL AND MEAN BODY WEIGHTS IN GRAMS OF FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	Days on Test													
		0	8	13	20	27	34	41	48	55	62	69	76	83	89
0	74-3551	227	244	259	277	290	288	307	315	325	329	330	316	341	342
	74-3553	208	213	241	248	258	261	276	278	290	293	293	283	308	303
	74-3555	210	223	239	241	253	254	271	270	286	283	283	264	291	259
	74-3557	219	232	256	263	256	268	273	284	285	290	297	280	313	314
	74-3559	217	226	231	251	250	254	263	263	272	272	275	244	276	260
	74-3561	203	222	229	237	242	241	261	264	271	273	268	260	293	283
	74-3563	209	214	223	229	236	235	245	252	257	256	259	245	266	266
	74-3565	212	226	245	256	259	265	275	282	277	269	281	264	290	287
	74-3567	221	230	242	255	261	259	278	282	290	292	298	279	306	300
	74-3569	208	219	235	251	263	255	261	264	277	276	227	263	289	289
	MEAN±SD	213±7	225±9	240±11	251±14	257±14	258±15	271±16	275±17	283±18	283±20	281±27	270±21	297±21	290±26
60	74-3611	223	233	245	248	257	261	266	276	278	290	293	285	307	305
	74-3613	226	233	248	257	262	262	269	280	286	283	291	279	293	302
	74-3615	221	230	254	261	263	267	275	276	278	279	284	274	285	291
	74-3617	224	226	243	255	259	256	271	267	280	285	293	298	293	297
	74-3619	249	257	271	293	298	296	306	308	311	317	316	325	318	324
	74-3621	219	224	237	254	251	257	269	268	279	279	290	293	287	295
	74-3623	222	228	238	243	249	250	258	250	262	258	261	278	281	280
	74-3625	224	229	254	263	270	271	281	282	288	294	295	309	311	307
	74-3627	224	233	251	263	262	269	276	276	293	288	301	296	295	308
	74-3629	218	226	239	260	261	267	278	276	288	285	292	300	293	312
	MEAN±SD	225±9*	232±9	248±10	260±13	263±14	266±13	275±13	276±15	284±13	286±15	292±14	294±16*	296±12	302±12
100	74-3591	211	217	226	241	244	242	256	249	251	258	260	250	266	265
	74-3593	220	232	242	258	257	271	289	280	285	294	298	293	304	311
	74-3595	226	238	242	262	266	272	281	287	287	292	295	283	295	291
	74-3597	230	233	235	256	261	262	266	270	275	281	283	284	290	294
	74-3599	226	235	247	257	254	261	265	273	280	284	292	276	303	296
	74-3601	222	239	235	270	274	280	288	301	297	308	312	299	318	325
	74-3603	214	229	240	257	260	266	276	280	279	276	284	271	288	289
	74-3605	228	239	236	267	267	282	291	300	302	300	303	297	311	320
	74-3607	232	241	258	272	275	283	288	296	295	304	315	302	311	316
	74-3609	236	245	256	267	277	277	282	284	287	296	298	286	306	310
	MEAN±SD	225±8*	235±8*	242±10	261±9	264±10	270±13	278±12	282±16	284±14	289±15	294±16	284±16	299±15	302±18
200	74-3571	238	256	272	287	293	301	313	314	325	332	335	325	341	338
	74-3573	223	233	246	262	264	269	280	282	291	295	298	281	304	306
	74-3575	223	242	251	264	274	284	289	285	297	299	297	292	302	315
	74-3577	217	227	237	250	253	255	268	265	270	275	279	262	279	293
	74-3579	227	239	251	258	270	273	280	290	298	304	310	296	316	314
	74-3581	227	241	260	272	268	276	290	297	297	310	313	301	326	327
	74-3583	232	245	259	274	276	284	298	300	306	315	324	309	319	332
	74-3585	223	225	238	242	245	248	255	262	257	286	286	273	284	284
	74-3587	228	244	265	268	276	278	284	293	296	296	302	290	311	318
	74-3589	221	237	250	265	266	269	275	281	283	291	292	283	301	305
	MEAN±SD	226±6*	239±9*	253±11*	264±13	269±13	274±15*	283±16	287±16	292±19	300±16	304±17*	291±18*	308±19	313±17

*Significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081948

Table A-3

INDIVIDUAL AND MEAN FOOD CONSUMPTION (GRAMS/RAT/DAY) OF MALE RATS MAINTAINED ON DRINKING WATER
CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 0-47

ppm VDC in water	Animal Number	Days on Test											
		0-1	8-12	13-15	16-19	20-22	23-26	27-29	30-33	34-36	37-40	41-43	44-47
0	74-3471, 72	26	24	23	24	24	21	23	20	25	26	23	22
	74-3473, 74	25	25	29	27	25	25	24	24	23	25	24	25
	74-3475, 76	26	24	25	25	25	26	24	24	26	26	25	26
	74-3477, 78	26	22	23	25	24	25	22	24	24	25	24	26
	74-3479, 80	30	26	33	32	31	30	30	30	30	31	44	--
	74-3481, 82	28	26	26	28	27	28	26	28	26	27	27	28
	74-3483, 84	28	27	27	28	27	28	26	26	25	26	26	28
	74-3485, 86	25	24	24	25	25	25	24	26	25	29	26	27
	74-3487, 88	27	26	24	26	25	25	23	24	21	26	25	26
	74-3489, 90	26	24	22	24	25	25	24	25	25	25	25	26
	MEAN±SD	26±2	25±1	26±3	26±2	26±2	26±2	25±2	25±3	25±2	27±2	27±6	26±2
60	74-3531, 32	26	25	--	26	26	--	36	39	26	27	27	27
	74-3533, 34	28	26	24	26	25	25	24	25	24	25	25	29
	74-3535, 36	29	27	26	29	28	28	27	26	24	24	25	27
	74-3537, 38	26	26	26	25	26	26	24	25	24	25	39	28
	74-3539, 40	26	24	26	26	26	25	25	25	24	26	25	28
	74-3541, 42	28	26	24	25	26	26	27	26	25	26	25	26
	74-3543, 44	27	25	24	24	24	24	24	23	24	25	25	23
	74-3545, 46	25	26	32	26	27	28	26	25	30	27	25	28
	74-3547, 48	27	26	25	26	25	26	26	25	--	25	25	28
	74-3549, 50	27	26	26	25	27	25	26	25	25	25	25	30
	MEAN±SD	27±1	26±1	26±2	26±1	26±1	26±1	26±4	26±5	25±2	26±1	26±4	27±2
100	74-3511, 12	25	25	24	26	25	24	26	25	24	25	25	26
	74-3513, 14	27	26	24	26	26	26	24	26	25	26	26	28
	74-3515, 16	24	23	22	23	23	24	23	23	23	24	24	25
	74-3517, 18	23	23	23	23	23	24	21	22	23	24	23	48
	74-3519, 20	30	28	29	29	29	28	29	29	31	30	29	29
	74-3521, 22	26	24	23	25	24	24	25	24	24	25	24	26
	74-3523, 24	24	22	22	22	22	22	22	22	22	23	22	25
	74-3525, 26	24	24	22	23	23	23	23	23	22	25	25	26
	74-3527, 28	27	26	27	28	27	27	27	26	25	26	26	28
	74-3529, 30	26	24	22	22	22	23	23	22	21	24	23	26
	MEAN±SD	26±2	24±2	24±2	25±2	24±2	24±2	24±3	24±2	24±3	25±2	25±2	29±7
200	74-3491, 92	25	25	23	24	24	24	22	23	24	24	23	26
	74-3493, 94	28	27	25	28	26	26	26	26	--	26	25	26
	74-3495, 96	25	24	22	24	24	24	24	24	23	24	24	26
	74-3497, 98	26	26	25	26	26	26	24	25	26	27	27	29
	74-3499, 3500	28	24	31	29	30	28	25	26	27	27	26	27
	74-3501, 02	26	25	24	26	25	25	24	24	23	25	24	25
	74-3503, 04	27	27	26	27	26	27	27	22	24	26	27	26
	74-3505, 06	25	25	24	25	25	26	25	25	24	25	25	27
	74-3507, 08	25	26	24	25	26	26	25	24	24	25	25	27
	74-3509, 10	24	22	21	22	22	23	23	23	23	24	24	25
	MEAN±SD	26±1	25±2	25±3	26±2	26±2	25±1	24±1	24±1	24±1	25±1	25±1	26±1

^aIndividual values are means of 2 rats caged together.

Table A-3, continued

INDIVIDUAL AND MEAN FOOD CONSUMPTION (GRAMS/RAT/DAY) OF MALE RATS MAINTAINED ON DRINKING WATER
CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 48-84

ppm VDC in water	Animal Number	Days on Test										
		48-50	51-54	55-57	58-61	62-64	65-68	69-71	72-75	76-78	79-82	83-84
0	74-3471, 72	23	20	22	18	15	24	26	27	22	25	23
	74-3473, 74	25	25	25	27	26	26	28	30	22	25	22
	74-3475, 76	25	26	26	26	26	26	27	28	20	27	25
	74-3477, 78	26	25	26	35	--	30	26	28	22	16	27
	74-3479, 80	31	30	--	19	31	28	31	33	--	32	--
	74-3481, 82	28	22	27	22	28	26	26	29	23	27	19
	74-3483, 84	25	26	30	15	25	26	25	27	21	24	24
	74-3485, 86	27	26	26	27	27	26	26	29	23	25	24
	74-3487, 88	27	26	42	8	--	23	23	--	25	28	29
	74-3489, 90	26	24	25	25	24	25	27	32	23	26	24
	MEAN±SD	26±2	25±3	28±6	22±8	25±5	26±2	26±2	29±2	22±1	25±4	24±3
60	74-3531, 32	26	--	25	27	26	25	38	26	21	23	20
	74-3533, 34	33	28	28	29	28	28	27	29	23	24	28
	74-3535, 36	26	28	27	28	28	31	27	29	24	27	27
	74-3537, 38	26	27	26	28	28	27	27	29	23	25	27
	74-3539, 40	26	27	25	28	25	25	26	31	23	24	26
	74-3541, 42	26	27	26	27	26	25	26	27	23	25	25
	74-3543, 44	25	26	26	27	27	26	25	28	24	24	26
	74-3545, 46	25	28	26	26	28	25	24	28	22	24	25
	74-3547, 48	25	26	26	27	27	26	26	28	23	26	26
	74-3549, 50	26	25	26	25	26	25	26	29	25	25	25
	MEAN±SD	26±2	27±1	26±1	27±1*	27±1	26±2	27±4	28±1	23±1	25±1	26±2
100	74-3511, 12	25	26	28	25	28	25	25	27	21	24	23
	74-3513, 14	27	28	28	28	27	28	27	30	24	27	26
	74-3515, 16	24	25	3	25	24	23	25	27	20	24	23
	74-3517, 18	24	24	45	25	25	22	25	27	21	23	24
	74-3519, 20	28	32	31	--	35	--	35	33	26	29	30
	74-3521, 22	24	26	25	27	26	25	24	26	21	24	24
	74-3523, 24	23	27	21	23	22	24	23	26	21	22	22
	74-3525, 26	24	25	24	26	25	24	24	27	21	24	25
	74-3527, 28	27	28	27	28	28	27	27	29	24	26	26
	74-3529, 30	24	25	24	25	25	22	24	26	22	26	24
	MEAN±SD	25±2	27±2	26±10	26±2	26±4	24±2	26±4	28±2	22±2	25±2	25±2
200	74-3491, 92	23	24	24	25	22	22	21	26	19	23	22
	74-3493, 94	25	26	25	26	25	26	--	29	22	25	22
	74-3495, 96	25	26	26	26	25	24	25	27	21	24	23
	74-3497, 98	26	26	28	--	28	28	26	28	26	26	25
	74-3499, 3500	26	27	28	28	28	28	28	29	25	26	27
	74-3501, 02	24	25	24	25	23	22	22	21	22	21	17
	74-3503, 04	26	27	28	--	29	28	28	27	26	26	26
	74-3505, 06	25	26	26	27	27	26	26	27	25	26	25
	74-3507, 08	26	25	27	28	26	26	26	27	23	26	24
	74-3509, 10	25	24	25	25	27	13	24	27	20	24	23
	MEAN±SD	25±1	26±1	26±1	26±1	26±2	24±5	25±2	27±2	23±2	25±2	23±3

^aIndividual values are means of 2 rats caged together.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081950

Table A-4

INDIVIDUAL AND MEAN FOOD CONSUMPTION (GRAMS/RAT/DAY) OF FEMALE RATS MAINTAINED ON DRINKING WATER
CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 0-47

ppm VDC in water	Animal Number	Days on Test											
		0-1	8-12	13-15	16-19	20-22	23-26	27-29	30-33	34-36	37-40	41-43	44-47
0	74-3551, 52	19	18	17	19	20	20	18	20	19	21	19	20
	74-3553, 54	22	20	19	19	20	20	4	19	20	23	18	19
	74-3555, 56	18	19	16	18	18	19	17	18	21	20	22	21
	74-3557, 58	21	22	20	19	19	18	20	18	21	23	19	23
	74-3559, 60	20	23	21	20	20	21	17	19	26	31	20	5
	74-3561, 62	22	17	17	18	21	19	30	20	19	22	20	19
	74-3563, 64	21	20	20	20	20	21	19	19	18	24	18	24
	74-3565, 66	17	19	18	20	19	19	19	19	18	19	16	19
	74-3567, 68	18	19	17	18	20	20	21	19	20	24	44	16
	74-3569, 70	22	18	22	20	25	20	16	19	20	21	31	15
	MEAN±SD	20±2	20±2	19±2	19±1	20±2	20±1	18±6	19±0	20±2	23±3	23±9	18±5
60	74-3611, 12	18	18	20	18	19	18	16	17	16	16	14	24
	74-3613, 14	19	17	18	17	17	18	18	18	19	21	14	24
	74-3615, 16	20	19	20	18	18	18	17	18	18	19	15	22
	74-3617, 18	20	18	25	18	19	22	17	17	17	18	14	24
	74-3619, 20	22	21	22	22	22	22	20	20	17	20	17	26
	74-3621, 22	20	18	19	18	20	21	21	18	18	20	14	27
	74-3623, 24	19	18	16	17	17	17	17	17	16	19	12	21
	74-3625, 26	20	18	23	19	18	18	17	18	20	17	14	22
	74-3627, 28	20	19	21	19	18	19	19	18	17	20	13	5
	74-3629, 30	19	19	18	18	19	20	20	19	18	18	14	24
	MEAN±SD	20±1	18±1	20±2	18±1	19±1	19±2	18±2	18±1	17±1*	19±2*	14±1*	22±6
100	74-3591, 92	20	17	17	18	18	18	16	18	18	18	16	19
	74-3593, 94	22	18	24	19	18	20	17	18	19	20	18	16
	74-3595, 96	18	18	24	18	18	18	18	17	17	17	17	20
	74-3597, 98	19	18	22	18	19	19	16	17	17	18	19	21
	74-3599, 3600	17	16	17	17	17	17	17	17	15	17	17	19
	74-3601, 02	20	16	24	21	20	19	19	20	19	20	21	24
	74-3603, 04	20	18	23	19	19	18	19	19	16	--	12	23
	74-3605, 06	23	19	25	20	20	21	20	19	17	--	14	24
	74-3607, 08	19	18	18	20	18	19	20	19	17	19	14	22
	74-3609, 10	20	18	26	20	21	19	21	19	18	20	21	28
	MEAN±SD	20±2	18±1*	22±3*	19±1	19±1	19±1	18±2	18±1	17±1*	19±1*	17±3*	22±3
200	74-3571, 72	21	20	20	21	21	20	20	20	18	21	18	23
	74-3573, 74	18	18	17	18	18	18	18	17	18	18	17	21
	74-3575, 76	21	18	19	19	19	18	18	19	18	20	18	21
	74-3577, 78	18	17	16	16	17	17	17	17	18	19	16	19
	74-3579, 80	25	19	17	20	20	20	20	18	18	20	18	22
	74-3581, 82	19	18	18	19	18	18	18	18	18	20	18	21
	74-3583, 84	17	18	21	19	18	18	18	18	17	18	17	23
	74-3585, 86	17	18	17	19	21	19	18	20	17	20	19	21
	74-3587, 88	20	20	18	18	20	19	18	19	17	18	17	22
	74-3589, 90	18	18	20	19	20	20	19	19	18	19	20	22
	MEAN±SD	19±3	18±1*	18±2	19±1	19±1	19±1	18±1	18±1	18±1*	19±1*	18±1	22±1

^aIndividual values are means of 2 rats caged together.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081951

Table A-4, continued

INDIVIDUAL AND MEAN FOOD CONSUMPTION (GRAMS/RAT/DAY) OF FEMALE RATS MAINTAINED ON DRINKING WATER
CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 48-84

ppm VDC in water	Animal Number	Days on Test										
		48-50	51-54	55-57	58-61	62-64	65-68	69-71	72-75	76-78	79-82	83-84
0	74-3551, 52	20	20	22	20	18	21	21	24	18	20	20
	74-3553, 54	20	21	28	22	21	23	25	30	19	24	22
	74-3555, 56	20	25	22	21	19	20	19	22	19	19	21
	74-3557, 58	20	21	20	21	22	22	22	28	22	19	21
	74-3559, 60	32	23	26	29	21	23	25	--	27	22	--
	74-3561, 62	18	19	26	19	19	23	22	25	18	19	16
	74-3563, 64	22	22	24	23	24	24	23	28	19	22	21
	74-3565, 66	17	18	20	18	20	19	22	21	17	23	18
	74-3567, 68	23	20	21	21	22	22	21	27	18	20	19
	74-3569, 70	42	22	20	22	20	--	25	27	18	20	18
	MEAN±SD	24±8	21±2	23±3	22±3	21±2	22±2	22±2	26±3	20±3	21±2	20±2
60	74-3611, 12	19	33	20	20	20	20	24	19	18	20	18
	74-3613, 14	19	20	17	18	21	19	--	--	17	18	20
	74-3615, 16	18	19	17	20	21	20	--	--	17	19	17
	74-3617, 18	19	19	19	21	18	21	--	--	19	19	18
	74-3619, 20	20	22	21	22	21	21	25	21	21	17	19
	74-3621, 22	18	20	18	20	20	19	18	20	20	18	20
	74-3623, 24	18	18	18	19	15	20	20	18	20	19	18
	74-3625, 26	16	19	19	19	17	16	21	20	20	19	16
	74-3627, 28	20	19	18	21	20	18	--	19	20	20	19
	74-3629, 30	19	19	18	20	17	20	20	18	21	19	16
	MEAN±SD	19±1	21±4	18±1*	20±1	19±2	19±1*	21±3	19±1*	19±2	19±1	18±2
100	74-3591, 92	18	19	15	19	19	19	21	21	17	20	19
	74-3593, 94	18	21	22	19	18	20	20	22	17	20	18
	74-3595, 96	18	18	20	18	18	19	18	20	16	19	18
	74-3597, 98	18	19	18	20	20	21	21	24	18	20	19
	74-3599, 3600	18	19	17	20	19	20	18	21	19	22	21
	74-3601, 02	19	22	23	24	21	23	22	23	20	21	20
	74-3603, 04	17	20	17	19	--	18	18	19	17	19	18
	74-3605, 06	18	22	19	20	--	18	18	--	16	21	18
	74-3607, 08	19	21	22	21	21	21	21	23	18	19	20
	74-3609, 10	18	24	20	21	21	24	20	24	24	21	20
	MEAN±SD	18±1*	21±2	19±2*	20±2	20±1	20±2	20±2*	22±2*	18±2	20±1	19±1
200	74-3571, 72	22	22	20	21	21	21	20	23	18	20	18
	74-3573, 74	19	19	18	20	19	19	20	21	16	19	--
	74-3575, 76	20	20	20	22	19	19	18	23	20	19	20
	74-3577, 78	18	19	19	21	20	20	21	22	15	18	20
	74-3579, 80	20	22	21	22	21	21	21	22	19	20	18
	74-3581, 82	19	20	20	19	19	21	20	22	18	20	17
	74-3583, 84	19	22	24	19	20	24	20	22	19	20	19
	74-3585, 86	22	--	21	22	22	21	20	22	17	21	19
	74-3587, 88	20	19	21	21	20	19	22	22	18	20	20
	74-3589, 90	20	20	18	21	20	21	22	24	18	21	20
	MEAN±SD	20±1	20±1	20±2*	21±1	20±1	20±2	20±1	22±1*	18±2	20±1	19±1

^aIndividual values are means of 2 rats caged together.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081952

Table A-5

INDIVIDUAL AND MEAN WATER CONSUMPTION (GRAMS/RAT/DAY) OF MALE RATS MAINTAINED ON DRINKING
WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 0-33

ppm VDC in water	Animal Number	Day on Test														
		0	1	2	8	9	10	11	12	13	15	19	22	26	29	33
0	74-3471, 72	38	46	42	40	42	37	40	37	40	36	38	38	4	23	42
	74-3473, 74	41	36	40	50	46	38	44	35	55	37	41	40	24	37	38
	74-3475, 76	42	42	62	38	38	36	40	38	42	34	40	40	43	34	40
	74-3477, 78	38	39	37	34	32	28	40	30	34	34	34	32	36	30	36
	74-3479, 80	52	48	52	46	45	44	47	33	62	44	48	54	45	45	46
	74-3481, 82	47	44	50	45	47	40	44	44	48	38	46	40	45	46	42
	74-3483, 84	50	41	47	47	45	40	46	40	44	36	41	42	44	39	36
	74-3485, 86	44	38	42	42	38	40	40	45	40	37	39	40	43	32	36
	74-3487, 88	44	42	44	44	48	35	48	39	42	36	37	40	39	36	38
	74-3489, 90	36	38	35	35	34	33	38	32	35	26	34	36	36	36	33
	MEAN±SD	43±5	42±4	45±8	42±5	42±6	37±5	43±5	37±5	44±9	36±5	40±5	40±5	36±13	36±7	39±4
60	74-3531, 32	38	--	41	42	42	42	39	42	--	34	40	40	60	38	26
	74-3533, 34	44	44	46	46	44	44	42	43	42	37	--	43	42	40	38
	74-3535, 36	46	48	50	47	45	48	44	48	44	65	47	52	48	44	44
	74-3537, 38	41	42	42	40	41	36	40	39	36	32	38	42	38	32	36
	74-3539, 40	39	44	43	38	39	40	40	39	35	36	41	40	36	44	38
	74-3541, 42	46	45	47	46	46	44	45	42	44	34	48	43	46	46	44
	74-3543, 44	42	40	41	42	36	36	38	38	36	37	--	38	38	38	35
	74-3545, 46	31	42	38	60	38	--	37	36	37	32	42	35	34	39	34
	74-3547, 48	44	44	42	38	44	38	44	41	40	36	38	39	40	44	40
	74-3549, 50	38	42	42	40	38	42	42	38	35	36	--	38	36	40	33
	MEAN±SD	41±5	43±2	43±4	44±7	41±3	41±4	41±3	41±3	39±4	38±10	42±4	41±4	42±8	40±4	37±6
100	74-3511, 12	37	42	46	38	36	35	40	38	35	32	38	40	38	40	36
	74-3513, 14	44	45	43	44	38	42	40	40	38	34	40	40	37	64	38
	74-3515, 16	39	42	44	38	37	40	38	40	34	38	37	43	40	35	36
	74-3517, 18	40	42	38	38	36	40	36	38	32	33	34	36	38	28	35
	74-3519, 20	47	48	45	46	--	66	42	45	44	42	40	44	42	44	42
	74-3521, 22	40	46	49	39	42	40	42	38	40	33	38	40	38	38	33
	74-3523, 24	36	40	41	36	36	36	38	36	34	32	33	34	34	36	36
	74-3525, 26	38	38	42	39	38	38	38	34	32	30	36	40	39	40	38
	74-3527, 28	42	44	47	44	44	41	46	40	40	34	40	40	40	40	38
	74-3529, 30	42	43	44	44	39	37	43	38	35	27	30	33	35	34	32
	MEAN±SD	40±3	43±3	44±3	41±4	38±3	41±9	40±3	39±3	37±4*	34±4	37±3	39±4	38±2	40±9	36±3
200	74-3491, 92	40	40	42	40	44	40	--	36	38	34	37	40	38	30	36
	74-3493, 94	43	42	42	46	39	42	42	38	45	42	42	41	37	54	34
	74-3495, 96	39	41	42	40	40	40	40	39	41	32	42	42	42	41	40
	74-3497, 98	44	48	44	44	--	44	56	45	44	40	46	44	42	40	43
	74-3499, 3500	41	40	40	40	44	34	42	22	60	38	38	43	--	34	39
	74-3501, 02	44	38	42	39	42	41	39	38	39	34	36	36	40	45	35
	74-3503, 04	44	48	49	50	45	50	50	44	45	42	43	44	40	40	40
	74-3505, 06	44	40	39	36	40	42	41	39	42	35	44	40	42	42	38
	74-3507, 08	38	46	42	39	42	38	40	39	44	35	50	38	39	36	32
	74-3509, 10	42	41	41	38	38	40	38	37	40	35	42	38	36	36	34
	MEAN±SD	42±2	43±3	42±3	41±4	41±2	41±4	43±6	38±6	44±6	37±4	42±4	41±3	39±2	40±6	37±4

^aIndividual values are means of 2 rats caged together of the water consumed on the indicated day.

*Significantly different from controls by Dunnett's test, $p < 0$

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Table A-5, continued

INDIVIDUAL AND MEAN WATER CONSUMPTION (GRAMS/RAT/DAY) OF MALE RATS MAINTAINED ON DRINKING
WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 36-85

ppm VDC in water	Animal Number	Day on Test														
		36	40	43	47	50	54	57	61	64	68	71	75	78	82	85
0	74-3471, 72	40	38	38	--	38	39	36	36	37	28	38	49	40	38	33
	74-3473, 74	44	44	44	36	41	46	48	48	44	44	45	55	46	46	29
	74-3475, 76	41	41	42	35	40	41	39	44	40	46	44	46	--	38	40
	74-3477, 78	38	38	36	30	40	39	40	45	28	38	38	48	56	54	--
	74-3479, 80	52	55	29	43	53	48	52	18	49	--	44	60	50	51	52
	74-3481, 82	46	48	47	40	44	47	52	46	31	46	46	56	49	46	42
	74-3483, 84	35	42	40	34	36	34	44	42	7	34	40	45	38	38	36
	74-3485, 86	42	46	76	40	45	49	45	46	46	42	42	54	43	45	41
	74-3487, 88	--	40	46	38	44	46	42	44	36	42	39	51	--	40	41
	74-3489, 90	40	37	41	35	38	41	40	40	34	38	40	51	40	41	38
	MEAN±SD	42±5	43±6	44±12	37±4	42±5	43±5	44±6	44±4	35±12	40±6	42±3	52±5	45±6	44±6	39±7
60	74-3531, 32	44	44	42	32	41	38	48	42	38	38	40	44	32	46	46
	74-3533, 34	42	48	44	38	44	50	44	43	47	48	44	52	36	--	43
	74-3535, 36	46	44	50	38	49	56	49	50	51	44	43	50	43	44	48
	74-3537, 38	38	40	44	37	44	44	44	40	42	36	37	46	36	--	42
	74-3539, 40	40	44	42	36	48	46	46	38	42	48	42	51	--	44	45
	74-3541, 42	46	46	46	42	51	49	44	46	52	46	46	50	40	42	44
	74-3543, 44	40	42	41	32	46	44	41	37	37	40	40	46	34	48	38
	74-3545, 46	35	40	40	30	42	38	36	36	34	36	38	42	30	--	40
	74-3547, 48	45	44	35	36	40	50	47	39	50	39	44	47	36	45	47
	74-3549, 50	40	42	39	32	37	39	35	32	36	46	40	46	32	35	38
	MEAN±SD	42±4	43±2	42±4	36±4	44±4	45±6	44±5	40±5	43±7	42±5	41±3	47±3	36±4*	44±4	43±4
100	74-3511, 12	40	75	40	30	41	64	42	42	40	43	40	46	34	37	44
	74-3513, 14	41	44	42	34	42	42	41	39	41	44	39	54	40	40	42
	74-3515, 16	41	46	42	30	52	44	34	--	40	48	118	52	45	42	44
	74-3517, 18	40	42	38	26	41	42	44	36	40	48	39	44	40	--	34
	74-3519, 20	48	52	46	32	50	47	41	29	49	36	42	45	42	46	42
	74-3521, 22	40	44	43	28	42	40	39	35	39	39	36	44	41	38	41
	74-3523, 24	37	41	44	30	42	42	46	36	40	40	38	44	37	38	40
	74-3525, 26	40	46	44	34	44	48	40	42	42	42	39	58	42	45	48
	74-3527, 28	38	40	44	30	42	45	40	38	42	38	38	50	38	37	40
	74-3529, 30	36	42	42	31	42	46	37	40	42	38	41	54	40	42	37
	MEAN±SD	40±3	47±10	43±2	30±2*	44±4	46±7	40±3	38±4*	41±3	42±4	47±25	49±5	40±3	41±3	41±4
200	74-3491, 92	40	44	40	32	34	42	36	34	36	38	38	48	38	43	38
	74-3493, 94	36	40	44	26	32	36	36	35	38	35	38	46	38	39	--
	74-3495, 96	42	42	47	32	42	42	43	42	50	38	42	52	45	38	35
	74-3497, 98	45	50	47	37	46	60	50	42	45	49	52	54	47	--	44
	74-3499, 3500	40	47	39	--	46	42	42	40	42	40	42	42	45	40	43
	74-3501, 02	32	38	38	28	34	34	32	28	29	24	24	21	27	23	18
	74-3503, 04	42	52	48	31	41	44	43	38	46	40	45	44	46	58	45
	74-3505, 06	38	43	40	33	42	42	42	36	43	40	44	34	40	38	41
	74-3507, 08	42	45	37	28	38	42	40	34	34	42	32	42	35	36	30
	74-3509, 10	40	44	44	31	44	41	40	53	47	42	40	48	40	37	48
	MEAN±SD	40±4	45±4	42±4	31±3*	40±5	42±7	40±5	38±7	41±7	39±6	40±8	43±10*	40±6	39±9	38±9

^aIndividual values are means of 2 rats caged together of the water consumed on the indicated day.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081954

Table A-6

INDIVIDUAL AND MEAN WATER CONSUMPTION (GRAMS/RAT/DAY) OF FEMALE RATS MAINTAINED ON DRINKING
WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 0-33

ppm VDC in water	Animal Number	Day on Test														
		0	1	2	8	9	10	11	12	13	15	19	22	26	29	33
0	74-3551, 52	30	32	30	34	35	--	36	36	26	26	28	31	36	30	30
	74-3553, 54	36	36	38	46	42	46	44	34	37	34	32	38	40	30	32
	74-3555, 56	32	31	38	36	48	45	--	40	34	23	30	46	40	30	34
	74-3557, 58	35	30	35	38	36	34	35	38	41	30	33	39	28	30	38
	74-3559, 60	33	28	33	33	33	32	31	30	36	24	32	28	35	28	34
	74-3561, 62	34	34	36	22	8	44	32	35	31	25	24	32	35	24	28
	74-3563, 64	36	34	40	40	38	37	34	33	44	30	38	42	38	43	34
	74-3565, 66	26	28	32	31	27	26	31	30	26	22	26	28	31	28	24
	74-3567, 68	56	11	36	34	28	33	34	32	31	28	34	34	36	30	28
	74-3569, 70	28	32	18	14	32	16	28	24	30	27	--	32	34	24	20
	MEAN±SD	35±8	30±7	34±6	32±9	33±11	35±10	34±4	33±5	34±6	27±4	31±4	35±6	35±4	30±5	30±5
60	74-3611, 12	32	34	36	33	33	32	30	32	34	26	56	37	35	30	28
	74-3613, 14	34	36	32	30	32	34	30	31	35	26	32	30	30	32	30
	74-3615, 16	38	38	37	40	34	33	34	34	33	28	32	36	36	31	34
	74-3617, 18	33	34	34	32	32	31	34	31	28	27	30	--	34	30	30
	74-3619, 20	42	36	40	40	32	38	38	38	36	34	--	40	42	34	41
	74-3621, 22	38	33	34	30	30	32	33	30	32	30	32	30	30	34	32
	74-3623, 24	31	34	36	28	33	34	36	34	30	28	28	30	32	74	31
	74-3625, 26	16	34	25	28	30	28	32	26	25	26	28	24	29	30	30
	74-3627, 28	35	32	33	30	34	31	30	30	31	--	32	28	30	32	30
	74-3629, 30	28	30	28	34	27	34	32	30	27	20	29	30	30	31	30
	MEAN±SD	33±7	34±2	33±4	32±4	32±2	33±3	33±2	32±3	31±4	27±4	33±8	31±5	33±4	36±14	32±4
100	74-3591, 92	33	36	32	27	32	32	30	27	28	28	31	32	30	24	28
	74-3593, 94	34	32	30	35	34	33	28	26	30	30	32	27	29	31	32
	74-3595, 96	30	26	27	29	28	28	26	25	27	24	26	28	25	22	24
	74-3597, 98	34	41	40	32	38	39	32	33	34	28	32	41	39	30	35
	74-3599, 3600	31	30	34	32	34	32	--	32	30	30	32	36	34	30	37
	74-3601, 02	30	38	36	30	31	32	32	20	50	21	30	34	38	32	32
	74-3603, 04	34	31	36	35	32	30	30	32	36	28	30	36	34	29	32
	74-3605, 06	32	38	33	36	30	33	30	19	44	34	32	34	30	32	30
	74-3607, 08	28	34	34	34	36	30	31	40	35	26	30	36	33	34	36
	74-3609, 10	28	30	36	31	32	28	32	32	35	25	32	34	36	30	30
	MEAN±SD	31±2	34±5	34±4	32±3	33±3	32±3	30±2	29±6	35±7	27±4	31±2	34±4	33±4	30±4	32±4
200	74-3571, 72	36	33	33	31	34	37	32	31	29	34	32	36	33	32	34
	74-3573, 74	32	38	37	33	31	31	30	36	32	28	34	32	35	32	35
	74-3575, 76	31	34	32	32	--	36	28	35	38	25	26	32	32	28	36
	74-3577, 78	28	30	32	26	26	30	31	26	24	28	28	26	28	28	32
	74-3579, 80	26	36	37	31	30	30	28	30	29	39	27	28	32	28	28
	74-3581, 82	31	28	38	32	32	--	26	27	28	27	30	30	28	32	32
	74-3583, 84	30	34	36	33	30	30	33	31	28	28	28	25	29	30	34
	74-3585, 86	23	39	35	36	36	35	38	35	32	30	30	40	36	30	34
	74-3587, 88	34	38	36	36	31	--	52	34	31	32	33	37	34	34	36
	74-3589, 90	28	36	33	30	34	38	35	30	36	30	33	36	36	34	36
	MEAN±SD	31±4	35±4	35±2	32±3	32±3	33±4	33±8	32±3	31±4	30±4	30±3	32±5	32±3	31±2	34±3

^aIndividual values are means of 2 rats caged together of the water consumed on the indicated day.

Table A-6, continued

INDIVIDUAL AND MEAN WATER CONSUMPTION (GRAMS/RAT/DAY) OF FEMALE RATS MAINTAINED ON DRINKING
WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS^a: DAYS 36-85

ppm VDC in water	Animal Number	Day on Test													
		36	40	43	47	50	54	57	61	64	68	71	75	82	85
0	74-3551, 52	38	37	32	32	40	40	40	42	37	38	38	48	40	40
	74-3553, 54	36	39	36	31	40	40	32	40	41	41	38	50	40	34
	74-3555, 56	40	36	38	32	40	38	36	44	40	42	42	48	42	67
	74-3557, 58	36	34	34	33	28	34	32	43	34	41	38	50	33	32
	74-3559, 60	36	26	33	26	41	40	40	42	41	40	40	28	36	28
	74-3561, 62	38	39	31	34	36	32	30	40	32	30	38	49	40	34
	74-3563, 64	32	38	40	36	36	42	42	46	40	40	42	55	50	43
	74-3565, 66	29	24	30	25	22	24	34	--	30	76	30	40	36	26
	74-3567, 68	44	42	39	30	39	35	39	41	40	40	42	54	43	40
	74-3569, 70	33	36	20	36	35	34	--	34	33	9	34	45	34	30
	MEAN±SD	36±4	35±6	33±6	32±4	36±6	36±6	37±4	41±3	37±4	40±16	38±4	47±8	39±5	38±12
60	74-3611, 12	33	35	41	37	40	44	38	36	40	38	44	50	40	38
	74-3613, 14	32	30	36	33	41	42	30	30	32	34	33	44	40	36
	74-3615, 16	38	30	42	31	35	40	36	36	35	42	39	48	41	42
	74-3617, 18	31	32	34	22	36	34	28	34	34	34	40	36	33	33
	74-3619, 20	34	34	42	36	34	41	38	42	36	35	40	42	37	40
	74-3621, 22	32	38	37	28	35	38	34	35	38	38	32	34	--	38
	74-3623, 24	32	34	37	27	36	33	30	34	32	32	36	36	38	34
	74-3625, 26	30	27	30	28	28	34	32	34	28	35	44	36	38	30
	74-3627, 28	26	32	34	25	31	39	28	32	34	38	34	32	32	37
	74-3629, 30	36	33	26	22	34	32	34	32	37	30	30	27	35	42
	MEAN±SD	32±3	32±3	36±5	29±5	35±4	38±4	33±4	35±3*	35±4	36±3	37±5	38±7*	37±3	37±4
100	74-3591, 92	33	35	36	--	34	38	34	30	33	39	35	45	34	37
	74-3593, 94	36	36	36	30	30	35	42	39	45	36	39	48	33	44
	74-3595, 96	30	27	30	24	22	28	30	28	32	28	27	37	28	31
	74-3597, 98	31	27	40	32	38	42	40	38	34	30	42	50	42	40
	74-3599, 3600	20	32	35	31	36	40	34	38	38	38	36	42	--	50
	74-3601, 02	41	32	36	34	36	38	36	36	30	34	38	40	37	34
	74-3603, 04	32	34	38	28	34	42	36	34	34	40	34	45	38	43
	74-3605, 06	32	33	37	32	34	39	32	28	38	39	36	44	36	31
	74-3607, 08	38	34	40	25	36	22	36	40	38	40	34	52	40	26
	74-3609, 10	30	28	34	32	30	30	32	34	36	37	34	40	35	34
	MEAN±SD	32±6	32±3	36±3	30±3	33±5	35±7	35±4	35±5*	36±4	36±4	35±4	44±5	36±4	37±7
200	74-3571, 72	36	34	35	26	42	47	44	41	33	35	44	52	42	40
	74-3573, 74	32	36	36	28	36	44	34	34	40	36	39	44	36	36
	74-3575, 76	40	36	33	25	44	36	36	35	36	33	36	46	--	42
	74-3577, 78	34	32	30	18	36	36	40	28	34	34	32	42	28	38
	74-3579, 80	34	28	30	20	74	33	34	34	29	35	35	42	34	32
	74-3581, 82	32	34	37	32	40	36	40	38	31	36	38	42	34	42
	74-3583, 84	34	33	36	30	47	34	40	35	35	42	37	44	34	38
	74-3585, 86	36	32	34	34	44	37	39	42	39	43	42	44	36	35
	74-3587, 88	44	39	33	39	42	50	46	46	45	47	46	58	40	42
	74-3589, 90	33	30	42	32	37	42	38	42	32	36	12	44	42	46
	MEAN±SD	35±4	33±3	34±4	28±6	44±11	40±6	39±4	37±5	35±5	38±5	36±9	46±5	36±5	39±4

^aIndividual values are means of 2 rats caged together of the water consumed on the indicated day.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081956

Table A-7

INDIVIDUAL AND MEAN HEMATOLOGIC VALUES FOR MALE RATS MAINTAINED ON DRINKING WATER
CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	PCV Percent		RBC $\times 10^6/\text{mm}^3$		Hgb g/100 ml		WBC $\times 10^3/\text{mm}^3$		WBC Differential Count (%)									
		30 ^a 86		30 86		30 86		30 86		Neut		Lymph		Mono		Eosin		Baso	
		30 ^a	86	30	86	30	86	30	86	30	86	30	86	30	86	30	86	30	86
0	74-3471	52	48	7.68	7.58	16.9	15.6	13.8	11.6	8	19	87	98	5	3	0	0	0	0
	74-3472	52	53	6.89	8.27	16.7	17.1	16.3	12.9	5	7	93	89	2	1	0	3	0	0
	74-3473	54	56	7.67	8.27	17.4	17.7	15.3	10.2	10	7	86	91	2	1	2	1	0	0
	74-3474	55	57	7.75	8.99	17.5	18.5	13.8	14.1	7	9	92	88	1	1	0	2	0	0
	74-3475	49	55	7.48	8.56	15.9	18.3	16.8	11.7	29	5	70	91	0	4	1	0	0	0
	MEAN±SD	52±2	54±4	7.49±0.35	8.33±0.51	16.9±0.6	17.4±1.2	15.2±1.4	12.1±1.5	12	9	85	91	2	2	1	1	0	0
60	74-3531	54	56	8.13	8.92	17.2	18.5	13.8	6.6	14	20	83	72	0	4	3	4	0	0
	74-3532	50	52	7.46	8.25	17.2	16.9	13.8	8.3	4	6	93	90	0	4	2	0	1	0
	74-3533	52	55	7.84	8.74	17.6	17.6	16.7	11.0	7	18	89	79	0	3	4	0	0	0
	74-3534	48	52	7.72	7.02	16.9	17.1	16.3	10.3	18	6	81	88	0	6	1	0	0	0
	74-3535	50	51	7.46	7.65	16.7	16.1	11.7	12.4	17	17	82	77	0	3	1	3	0	0
	MEAN±SD	51±2	53±2	7.72±0.28	8.12±0.79	17.1±0.3	17.2±0.9	14.5±2.1	9.7±2.3	12	13	86	81	0	4	2	1	0	0
100	74-3511	52	52	7.46	8.74	17.1	16.6	15.0	12.9	13	17	86	79	0	3	0	1	1	0
	74-3512	52	53	7.96	8.31	17.3	16.8	15.4	8.1	5	18	94	78	0	3	1	1	0	0
	74-3513	58	53	8.39	8.19	19.1	17.2	13.3	12.5	4	9	93	88	0	3	3	0	0	0
	74-3514	56	54	7.11	8.51	18.1	17.6	11.4	14.2	3	13	96	82	0	2	1	3	0	0
	74-3515	52	53	7.88	8.49	17.1	16.7	16.9	10.0	16	3	81	90	1	5	1	2	1	0
	MEAN±SD	54±3	53±1	7.76±0.49	8.45±0.21	17.7±0.9	17.0±0.4	14.4±2.1	11.5±2.5	9	12	90	83	0	3	1	1	0	0
200	74-3491	50	52	7.56	8.24	16.7	16.9	13.5	11.8	3	15	97	82	0	1	0	2	0	0
	74-3492	53	54	7.72	8.89	17.0	17.7	18.0	12.7	7	6	92	92	0	2	1	0	0	0
	74-3493	54	55	8.00	8.08	17.8	17.2	15.3	13.8	5	10	94	85	0	2	1	3	0	0
	74-3494	55	52	7.72	7.96	17.8	17.2	19.2	12.7	7	11	89	85	2	2	2	2	0	0
	74-3495	50	54	7.51	8.59	16.7	18.4	12.4	13.7	8	9	90	84	0	6	1	1	1	0
	MEAN±SD	52±2	53±1	7.70±0.19	8.35±0.38	17.2±0.6	17.5±0.6	15.7±2.9	12.9±0.8	6	10	93	86	0	3	1	2	0	0

^aDays on test

No values were significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081957

Table A-8

INDIVIDUAL AND MEAN HEMATOLOGIC VALUES FOR FEMALE RATS MAINTAINED ON DRINKING WATER
CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	PCV Percent		RBC $\times 10^6/\text{mm}^3$		Hgb g/100 ml		WBC $\times 10^3/\text{mm}^3$		WBC Differential Count (%)									
		30 ^a 86		30 86		30 86		30 86		Neut		Lymph		Mono		Eosin		Baso	
		30	86	30	86	30	86	30	86	30	86	30	86	30	86	30	86	30	86
0	74-3551	53	48	8.39	7.79	17.6	16.2	14.1	8.7	6	2	93	90	0	6	1	2	0	0
	74-3552	48	47	7.62	7.90	16.2	15.7	14.2	8.6	6	12	91	85	2	1	0	2	1	0
	74-3553	49	46	7.40	7.49	15.6	15.2	19.3	9.0	12	6	86	88	1	4	1	2	0	0
	74-3554	49	48	7.56	7.59	16.2	16.9	16.0	10.7	11	15	88	81	0	2	1	2	0	0
	74-3555	54	46	7.97	6.98	17.2	16.1	15.8	10.2	15	12	81	82	3	5	1	1	0	0
	MEAN±SD	50±2	47±1	7.79±0.40	7.55±0.36	16.6±0.8	16.0±0.6	15.9±2.1	9.4±1.0	10	9	88	85	1	4	1	2	0	0
60	74-3611	48	50	7.53	7.10	15.6	16.1	13.3	12.5	8	8	92	85	0	5	0	2	0	0
	74-3612	49	52	7.12	7.42	16.3	17.3	11.3	14.5	16	19	80	74	2	4	2	3	0	0
	74-3613	51	48	7.73	7.77	16.9	17.4	17.6	8.7	6	10	91	84	2	4	1	2	0	0
	74-3614	55	54	8.53	8.11	17.4	17.6	13.0	14.7	7	11	89	86	3	2	1	1	0	0
	74-3615	52	52	7.18	7.27	16.6	17.1	16.3	11.7	15	10	84	82	0	7	1	1	0	0
	MEAN±SD	51±3	51±2*	7.62±0.57	7.53±0.41	16.6±0.7	17.1±0.6*	14.3±2.6	12.4±2.4	11	12	87	82	1	4	1	2	0	0
100	74-3591	50	48	7.80	7.62	16.5	16.2	16.4	11.9	13	7	85	86	0	5	2	2	0	0
	74-3592	50	46	6.98	7.23	15.5	16.1	19.9	15.6	4	3	93	90	2	6	1	1	0	0
	74-3593	54	54	7.79	8.53	17.0	17.9	17.5	10.4	9	7	87	87	2	5	0	1	2	0
	74-3594	48	48	7.81	7.90	16.2	16.6	18.2	13.8	12	13	86	79	1	5	1	2	0	0
	74-3595	50	46	7.40	7.32	16.3	15.9	19.9	15.5	4	9	91	86	2	3	2	2	1	0
	MEAN±SD	50±2	48±3	7.56±0.36	7.72±0.52	16.3±0.5	16.5±0.8	18.4±1.5	13.4±2.3	8	8	89	86	1	5	1	2	1	0
200	74-3571	50	47	7.64	7.65	16.6	16.6	18.9	7.8	19	12	79	81	2	6	0	1	0	0
	74-3572	52	46	7.46	6.94	16.6	15.8	17.7	10.8	6	7	93	88	0	3	1	2	0	0
	74-3573	53	48	8.17	7.70	17.2	16.3	12.9	7.4	11	15	89	77	0	4	0	4	0	0
	74-3574	51	48	7.92	7.56	16.5	15.9	15.0	11.8	9	10	90	84	0	5	1	1	0	0
	74-3575	51	48	8.00	7.70	16.9	15.9	16.1	8.1	14	4	82	91	4	4	0	1	0	0
	MEAN±SD	51±1	47±1	7.84±0.29	7.51±0.32	16.8±0.3	16.1±0.3	16.1±2.3	9.1±2.0	12	10	87	84	1	4	0	2	0	0

^aDays on test

*Significantly different from controls by Dunnett's test, $p < 0.05$.

Table A-9

RESULTS OF URINALYSES OBTAINED FROM MALE RATS MAINTAINED ON DRINKING
WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	Specific Gravity			pH			Sugar			Protein			Ketones			Occult Blood			Bilirubin		
		30 ^a	62	85	30	62	85	30	62	85	30	62	85	30	62	85	30	62	85	30	62	85
0	74-3471	1.035	1.060	1.065	6.5	6.5	6.0	neg	neg	neg	+2	+1	+2	neg	trace	small	neg	neg	neg	neg	neg	neg
	74-3472	1.053	1.035	1.048	6.0	6.5	6.5	neg	neg	neg	+1	+1	+1	neg	neg	small	neg	neg	neg	neg	neg	neg
	74-3473	1.053	1.045	1.043	6.0	6.0	7.0	neg	neg	neg	+1	trace	+1	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3474	1.048	1.035	1.043	6.0	6.0	6.0	neg	neg	neg	+1	+1	+2	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3475	1.047	1.043	1.059	6.0	6.0	6.0	neg	neg	neg	+1	+1	+1	neg	neg	small	neg	neg	neg	neg	neg	neg
60	74-3531	1.055	1.044	1.065	6.0	6.0	6.0	neg	neg	neg	+2	+3	+3	neg	neg	small	neg	neg	neg	neg	neg	neg
	74-3532	1.050	1.064	1.066	6.5	6.0	6.0	neg	neg	neg	+2	+2	+3	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3533	1.055	1.053	1.053	6.0	6.0	6.0	neg	neg	neg	+1	+1	+2	neg	neg	small	neg	neg	neg	neg	neg	neg
	74-3534	1.060	1.050	1.042	6.0	6.0	7.0	neg	neg	neg	+2	+3	+2	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3535	1.023	1.033	1.025	6.5	6.0	6.5	neg	neg	neg	trace	trace	+2	neg	neg	small	neg	neg	small	neg	neg	neg
100	74-3511	1.054	1.040	1.047	6.0	6.5	6.0	neg	neg	neg	+2	+2	+2	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3512	1.059	1.043	1.048	6.5	6.0	5.5	neg	neg	neg	+2	+1	+1	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3513	>1.066	1.061	1.057	6.0	6.0	6.0	neg	neg	neg	+3	+3	+3	trace	trace	trace	neg	neg	neg	neg	neg	neg
	74-3514	1.063	1.040	1.062	6.0	6.5	6.0	neg	neg	neg	+2	+1	+2	neg	neg	neg	mod.	neg	neg	neg	neg	neg
	74-3515	1.049	1.059	1.038	6.0	6.0	6.5	neg	neg	neg	+3	+2	+2	neg	neg	neg	neg	small	neg	neg	neg	neg
200	74-3491	1.064	1.056	1.030	6.0	6.0	6.5	neg	neg	neg	+2	+3	+3	trace	neg	neg	neg	neg	neg	neg	neg	neg
	74-3492	1.043	1.060	>1.066	6.0	6.0	6.0	neg	neg	neg	+2	+2	+3	trace	trace	neg	neg	neg	neg	neg	neg	neg
	74-3493	>1.066	1.060	1.054	6.0	6.0	6.5	neg	neg	neg	+3	+2	+2	neg	neg	small	neg	neg	neg	neg	neg	neg
	74-3494	1.064	1.039	1.045	6.0	7.0	6.0	neg	neg	neg	+3	+3	+3	neg	trace	neg	neg	neg	neg	neg	neg	neg
	74-3495	1.061	1.036	1.023	6.0	7.0	6.0	neg	neg	neg	+2	+1	+2	neg	neg	neg	neg	neg	small	neg	neg	neg

^aDays on test

SL 081959

Table A-10

RESULTS OF URINALYSES OBTAINED FROM FEMALE RATS MAINTAINED ON DRINKING
WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	Specific Gravity			pH			Sugar			Protein			Ketones			Occult Blood			Bilirubin		
		30 ^a	62	86	30	62	86	30	62	86	30	62	86	30	62	86	30	62	86	30	62	86
0	74-3551	>1.066	1.033	1.027	6.0	7.0	7.5	neg	neg	neg	+3	+3	trace	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3552	1.039	1.032	1.027	7.0	6.5	7.5	neg	neg	neg	+1	trace	trace	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3553	1.044	1.047	1.063	6.0	6.5	6.0	neg	neg	neg	+2	+3	+3	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3554	1.034	1.030	1.044	7.0	6.0	6.0	neg	neg	neg	+1	+1	+2	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3555	1.058	1.028	1.033	6.0	6.5	6.5	neg	neg	neg	+2	+1	trace	neg	neg	trace	neg	neg	neg	neg	neg	neg
60	74-3611	1.032	1.029	1.028	7.0	6.0	6.5	neg	neg	neg	trace	trace	trace	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3612	1.027	1.041	1.058	6.5	6.0	6.0	neg	neg	neg	+1	+2	+2	neg	neg	small	neg	neg	neg	neg	neg	neg
	74-3613	1.052	1.045	1.035	6.0	6.0	7.5	neg	neg	neg	+2	+3	+3	neg	trace	trace	neg	neg	neg	neg	neg	neg
	74-3614	1.024	1.045	1.049	7.5	6.0	6.5	neg	neg	neg	+1	+1	+1	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3615	1.055	1.065	1.064	5.5	6.0	6.0	neg	neg	neg	+2	+3	+3	neg	trace	trace	neg	neg	neg	neg	neg	neg
100	74-3591	1.057	1.033	1.051	6.0	6.0	6.0	neg	neg	neg	+1	+1	+1	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3592	1.026	1.035	1.043	6.5	6.0	6.0	neg	neg	neg	trace	+1	+1	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3593	1.041	1.031	1.035	6.0	6.0	6.0	neg	neg	neg	+2	+1	+2	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3594	>1.066	1.021	1.046	6.0	7.0	6.0	neg	neg	neg	+3	trace	+1	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3595	1.044	1.055	1.042	6.0	6.0	6.5	neg	neg	neg	+1	+1	+1	neg	neg	neg	neg	neg	neg	neg	neg	neg
200	74-3571	1.028	1.034	1.044	6.0	6.0	6.0	neg	neg	neg	+2	+2	+2	neg	neg	trace	neg	neg	neg	neg	neg	neg
	74-3572	1.064	1.056	1.043	7.0	6.0	6.5	neg	neg	neg	+2	+1	+1	neg	trace	small	neg	neg	neg	neg	neg	neg
	74-3573	1.044	1.038	1.033	6.0	6.0	6.5	neg	neg	neg	+1	trace	trace	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3574	1.064	1.054	1.035	7.0	6.0	7.0	neg	neg	neg	+2	+1	+1	neg	neg	neg	neg	neg	neg	neg	neg	neg
	74-3575	1.047	1.025	1.062	8.0	7.0	6.0	neg	neg	neg	+3	+3	+2	neg	neg	trace	neg	neg	neg	neg	neg	neg

^aDays on test

SL 081960

Table A-11

INDIVIDUAL AND MEAN CLINICAL CHEMISTRY VALUES FOR MALE AND FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

Days on test	ppm VDC in water	Males				Females			
		Animal Number	BUN mg %	AP mU/ml	SGPT mU/ml	Animal Number	BUN mg %	AP mU/ml	SGPT mU/ml
30	0	74-3476	27	481	44	74-3556	26	438	38
		74-3477	28	479	49	74-3557	26	463	43
		74-3478	30	460	47	74-3558	26	393	46
		74-3479	28	>500	58	74-3559	23	377	47
		74-3480	28	446	47	74-3560	28	451	42
		MEAN±SD	28±1	--- ^a	49±5	MEAN±SD	26±2	---	43±4
	60	74-3536	29	422	45	74-3616	21	325	48
		74-3537	27	471	46	74-3617	22	387	37
		74-3538	24	>500	52	74-3618	24	402	45
		74-3539	28	437	49	74-3619	20	>500	44
		74-3540	27	469	45	74-3620	20	460	49
		MEAN±SD	27±2	---	47±3	MEAN±SD	21±1	---	45±5
	100	74-3516	26	>500	50	74-3596	28	353	51
		74-3517	24	>500	49	74-3597	26	438	42
		74-3518	26	>500	53	74-3598	25	475	49
		74-3519	24	439	45	74-3599	25	384	45
		74-3520	27	457	49	74-3600	22	348	45
		MEAN±SD	26±1	---	49±3	MEAN±SD	25±2	---	46±4
	200	74-3496	22	482	53	74-3576	27	446	42
		74-3497	24	482	50	74-3577	23	477	64
		74-3498	26	>500	48	74-3578	26	>500	54
		74-3499	25	>500	43	74-3579	36	>500	65
		74-3500	28	460	58	74-3580	28	493	56
		MEAN±SD	25±2*	---	50±6	MEAN±SD	28±5	---	56±9*
90	0	74-3471	20	108	49	74-3551	20	82	28
		74-3473	18	83	37	74-3553	26	142	26
		74-3475	22	108	34	74-3555	20	83	23
		74-3477	14	152	46	74-3557	18	101	28
		74-3479	19	141	45	74-3559	19	80	23
		74-3481	22	150	47	74-3561	18	70	29
		74-3483	17	134	41	74-3563	26	118	35
		74-3485	20	128	48	74-3565	14	60	25
		74-3487	24	128	40	74-3567	22	84	26
		74-3489	22	117	31	74-3569	18	117	32
		MEAN±SD	20±3	125±21	42±6	MEAN±SD	20±4	94±25	28±4
	60	74-3531	19	106	41	74-3611	19	70	31
		74-3533	16	107	34	74-3613	24	74	27
		74-3535	19	93	38	74-3615	21	82	26
		74-3537	20	120	46	74-3617	17	74	22
		74-3539	15	89	33	74-3619	23	99	25
		74-3541	17	108	35	74-3621	21	86	26
		74-3543	18	84	27	74-3623	13	83	28
		74-3545	23	159	34	74-3625	22	74	21
		74-3547	27	65	22	74-3627	21	65	23
		74-3549	16	112	31	74-3629	22	77	25
		MEAN±SD	19±4	104±25	34±7*	MEAN±SD	20±3	78±10	25±3
	100	74-3511	19	114	36	74-3591	22	80	25
		74-3513	19	88	31	74-3593	22	98	31
		74-3515	20	108	37	74-3595	18	55	24
		74-3517	18	108	39	74-3597	17	73	23
		74-3519	20	104	32	74-3599	15	66	21
		74-3521	17	111	34	74-3601	21	80	28
		74-3523	17	149	43	74-3603	18	90	26
		74-3525	18	124	44	74-3605	22	88	26
		74-3527	16	113	27	74-3607	19	109	22
		74-3529	16	125	29	74-3609	21	90	27
		MEAN±SD	18±1	114±16	35±6	MEAN±SD	20±2	83±16	25±3
	200	74-3491	20	91	41	74-3571	18	61	28
		74-3493	20	100	39	74-3573	19	100	25
		74-3495	18	149	28	74-3575	26	63	29
		74-3497	19	104	35	74-3577	18	114	34
		74-3499	18	100	44	74-3579	21	120	34
		74-3501	18	122	30	74-3581	17	96	27
		74-3503	20	149	36	74-3583	22	159	29
		74-3505	27	119	34	74-3585	17	91	20
		74-3507	20	162	33	74-3587	18	76	23
		74-3509	20	125	30	74-3589	20	67	30
		MEAN±SD	20±3	122±24	35±5*	MEAN±SD	20±3	95±31	28±4

^aNot analyzed statistically because of values that were too high to measure.

*Significantly different from controls by Dunnett's test, $p < 0.05$.

SL 081961

Table A-12

INDIVIDUAL AND MEAN TERMINAL BODY WEIGHTS, ORGAN WEIGHTS AND ORGAN/BODY WEIGHT RATIOS OF MALE RATS
MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	Terminal Body wt., starved,g	Organ Weights (g and g/100g Body Weight)									
			Brain		Heart		Liver		Kidney		Testes	
			g	g/100g	g	g/100g	g	g/100g	g	g/100g	g	g/100g
0	74-3471	403	1.88	0.47	1.29	0.32	10.27	2.55	3.25	0.81	4.08	1.01
	74-3473	395	1.89	0.48	1.22	0.31	11.52	2.92	2.92	0.74	4.00	1.01
	74-3475	408	1.96	0.48	1.29	0.32	10.95	2.69	2.75	0.67	4.00	0.98
	74-3477	373	1.89	0.51	1.13	0.30	10.38	2.78	3.08	0.83	4.10	1.10
	74-3479	524	1.96	0.37	1.55	0.30	16.49	3.15	4.09	0.78	3.86	0.74
	74-3481	440	1.90	0.43	1.50	0.34	13.06	3.47	3.28	0.75	3.63	0.83
	74-3483	475	1.89	0.40	1.47	0.31	12.69	2.67	2.90	0.61	4.27	0.90
	74-3485	458	1.89	0.41	1.52	0.33	13.26	2.90	3.49	0.76	4.09	0.89
	74-3487	442	1.87	0.42	1.40	0.32	12.28	2.78	3.20	0.73	3.87	0.88
	74-3489	461	1.90	0.41	1.38	0.30	13.26	2.88	3.48	0.76	3.92	0.85
	MEAN±SD	438±45	1.90±0.03	0.44±0.04	1.38±0.14	0.32±0.01	12.42±1.83	2.83±0.17	3.24±0.38	0.74±0.06	3.98±0.17	0.92±0.11
60	74-3531	464	1.82	0.39	1.38	0.30	12.31	2.65	3.28	0.71	4.29	0.93
	74-3533	468	1.95	0.42	1.40	0.30	11.75	2.51	3.29	0.70	3.94	0.84
	74-3535	498	1.93	0.39	1.45	0.29	13.34	2.68	3.02	0.61	4.07	0.82
	74-3537	520	2.00	0.38	1.46	0.28	14.36	2.76	3.43	0.66	3.74	0.72
	74-3539	450	1.96	0.44	1.36	0.30	11.76	2.61	3.05	0.68	3.92	0.87
	74-3541	437	1.83	0.42	1.35	0.31	12.71	2.91	2.92	0.67	3.82	0.87
	74-3543	477	1.84	0.39	1.27	0.27	14.10	2.96	3.37	0.71	3.95	0.83
	74-3545	434	1.88	0.43	1.33	0.31	10.50	2.42	2.94	0.68	3.86	0.89
	74-3547	446	1.90	0.43	1.34	0.30	12.05	2.70	3.45	0.77	3.82	0.86
	74-3549	441	1.77	0.40	1.43	0.32	12.00	2.72	3.11	0.71	3.80	0.86
	MEAN±SD	464±28	1.89±0.07	0.41±0.02	1.38±0.06	0.30±0.01	12.49±1.17	2.69±0.16	3.19±0.20	0.69±0.04*	3.92±0.16	0.85±0.06
100	74-3511	450	1.73	0.38	1.30	0.29	11.86	2.63	3.55	0.79	3.72	0.83
	74-3513	541	1.92	0.35	1.60	0.29	16.44	3.04	4.09	0.76	4.45	0.82
	74-3515	427	1.99	0.47	1.17	0.27	10.48	2.45	3.01	0.70	4.05	0.95
	74-3517	386	1.84	0.48	1.11	0.29	9.89	2.56	2.93	0.76	3.79	0.98
	74-3519	486	1.73	0.36	1.37	0.28	13.36	2.75	3.62	0.74	3.87	0.79
	74-3521	439	1.94	0.44	1.40	0.32	12.53	2.85	3.45	0.78	3.79	0.86
	74-3523	412	1.85	0.45	1.23	0.30	10.69	2.60	2.91	0.71	3.55	0.86
	74-3525	418	1.92	0.46	1.39	0.33	11.23	2.69	2.94	0.70	4.43	1.06
	74-3527	496	1.88	0.38	1.54	0.31	14.48	2.92	3.79	0.76	4.18	0.84
	74-3529	420	1.88	0.45	1.24	0.29	11.93	2.84	3.32	0.79	4.10	0.98
	MEAN±SD	448±47	1.87±0.09	0.42±0.05	1.34±0.16	0.30±0.02	12.29±2.01	2.73±0.18	3.36±0.41	0.75±0.04	3.99±0.30	0.90±0.09
200	74-3491	399	1.82	0.46	1.25	0.31	10.48	2.62	2.99	0.75	3.82	0.96
	74-3493	418	1.92	0.46	1.23	0.29	11.50	2.75	3.10	0.74	4.23	1.01
	74-3495	449	1.96	0.44	1.34	0.30	10.99	2.45	3.10	0.69	3.49	0.78
	74-3497	486	1.85	0.38	1.56	0.32	12.88	2.65	3.44	0.71	3.95	0.81
	74-3499	476	1.80	0.38	1.60	0.34	13.00	2.73	3.69	0.77	3.61	0.76
	74-3501	473	1.85	0.39	1.30	0.27	12.44	2.63	3.38	0.71	3.89	0.82
	74-3503	502	1.99	0.40	1.50	0.30	13.07	2.61	3.32	0.66	3.82	0.76
	74-3505	494	1.81	0.37	1.40	0.28	14.21	2.88	3.23	0.65	4.00	0.81
	74-3507	467	1.92	0.41	1.38	0.29	12.85	2.75	3.34	0.71	3.89	0.83
	74-3509	418	1.82	0.43	1.44	0.34	12.36	2.96	3.13	0.75	4.18	1.00
	MEAN±SD	458±35	1.87±0.07	0.41±0.03	1.40±0.13	0.30±0.02	12.39±1.11	2.70±0.15	3.27±0.21	0.71±0.04	3.89±0.23	0.85±0.10

*Significantly different from controls by Dunnett's test, $p < 0.05$.

Table A-13

INDIVIDUAL AND MEAN TERMINAL BODY WEIGHTS, ORGAN WEIGHTS AND ORGAN/BODY WEIGHT RATIOS OF
FEMALE RATS MAINTAINED ON DRINKING WATER CONTAINING VINYLIDENE CHLORIDE FOR 90 DAYS

ppm VDC in water	Animal Number	Terminal Body wt., starved, g	Organ weights (g and g/100g body weight)							
			Brain		Heart		Liver		Kidney	
			g	g/100g	g	g/100g	g	g/100g	g	g/100g
0	74-3551	323	1.73	0.53	1.00	0.31	8.67	2.68	2.23	0.69
	74-3553	279	1.78	0.64	0.92	0.33	7.24	2.59	1.96	0.70
	74-3555	262	1.72	0.66	0.89	0.34	6.45	2.47	1.93	0.74
	74-3557	289	1.80	0.62	1.06	0.37	7.67	2.66	2.03	0.70
	74-3559	260	1.79	0.69	0.86	0.31	6.45	2.47	2.07	0.80
	74-3561	260	1.69	0.65	0.94	0.36	6.61	2.54	1.88	0.72
	74-3563	246	1.85	0.75	0.90	0.37	6.51	2.65	1.80	0.73
	74-3565	267	1.85	0.69	0.86	0.32	6.77	2.53	1.88	0.70
	74-3567	277	1.77	0.64	0.89	0.32	7.35	2.66	2.00	0.72
	74-3569	268	1.78	0.67	0.97	0.36	6.62	2.47	1.86	0.70
	MEAN±SD	273±21	1.78±0.05	0.65±0.06	0.93±0.06	0.34±0.02	7.03±0.72	2.57±0.09	1.96±0.13	0.72±0.03
60	74-3611	282	1.87	0.66	0.93	0.33	6.89	2.44	1.90	0.67
	74-3613	274	1.87	0.68	0.92	0.34	7.28	2.65	1.86	0.68
	74-3615	267	1.76	0.66	0.98	0.37	6.87	2.57	1.76	0.66
	74-3617	188	1.79	0.95	0.99	0.52	7.43	3.95	2.10	1.12
	74-3619	296	1.85	0.62	1.03	0.35	7.99	2.70	2.33	0.79
	74-3621	268	1.72	0.64	0.92	0.34	7.03	2.62	1.77	0.66
	74-3623	257	1.80	0.70	1.00	0.39	7.02	2.73	1.88	0.73
	74-3625	284	1.86	0.66	1.06	0.37	7.23	2.54	1.92	0.67
	74-3627	276	1.75	0.63	0.90	0.33	7.14	2.59	1.93	0.67
	74-3629	282	1.75	0.62	0.97	0.35	7.83	2.78	2.21	0.78
	MEAN±SD	267±30	1.80±0.06	0.68±0.10	0.97±0.05	0.37±0.06	7.27±0.38	2.76±0.43	1.88±0.35	0.71±0.18
100	74-3591	244	1.79	0.73	0.82	0.34	6.33	2.59	1.76	0.72
	74-3593	287	1.85	0.64	0.93	0.32	6.52	2.27	1.82	0.63
	74-3595	273	1.81	0.66	0.91	0.34	7.11	2.61	1.93	0.71
	74-3597	270	1.76	0.65	0.88	0.32	7.54	2.79	1.88	0.69
	74-3599	273	1.77	0.65	0.93	0.34	6.93	2.54	1.93	0.71
	74-3601	298	1.73	0.58	1.06	0.36	7.41	2.49	1.98	0.67
	74-3603	267	1.77	0.66	0.85	0.32	6.51	2.44	1.89	0.71
	74-3605	291	1.72	0.59	1.03	0.35	7.85	2.70	2.21	0.76
	74-3607	298	1.74	0.58	0.91	0.30	7.55	2.53	1.99	0.67
	74-3609	282	1.75	0.62	1.05	0.37	7.77	2.75	2.16	0.77
	MEAN±SD	278±16	1.77±0.04	0.64±0.05	0.94±0.08	0.34±0.02	7.15±0.56	2.57±0.15	1.96±0.14	0.70±0.04
200	74-3571	313	1.80	0.57	0.96	0.31	8.36	2.67	2.16	0.69
	74-3573	283	1.65	0.58	0.86	0.31	6.74	2.39	1.99	0.70
	74-3575	291	1.78	0.61	1.04	0.36	7.49	2.58	2.10	0.72
	74-3577	267	1.73	0.65	0.92	0.34	6.73	2.52	1.80	0.68
	74-3579	291	1.74	0.60	0.95	0.33	7.56	2.59	2.06	0.71
	74-3581	306	1.85	0.60	0.95	0.31	8.03	2.63	2.16	0.71
	74-3583	307	1.82	0.59	1.01	0.33	7.54	2.46	2.07	0.68
	74-3585	262	1.72	0.66	0.93	0.36	6.44	2.45	1.87	0.71
	74-3587	292	1.80	0.62	1.02	0.35	7.63	2.61	2.14	0.73
	74-3589	273	1.88	0.69	1.00	0.36	8.25	3.02	2.16	0.79
	MEAN±SD	288±17	1.78±0.07	0.62±0.04	0.96±0.05	0.34±0.02	7.48±0.66	2.59±0.17	2.05±0.13	0.71±0.03

There were no significant differences between treated and control groups by Dunnett's test, $p < 0.05$.

SL 081963

90 day, drinking water
Sprague-Dawley: Spartan Seelieham

0, 60, 100, 200 ppm in H₂O

- no deaths
- no significant clinical (cage side) observation
- no dose-related weight differences
- no treatment related hematology differences
- no difference in urine samples (S.G, pH, sugar, protein, ketones, occult blood, bilirubin)
- no organ weight differences
- Histopathology
 - 1/5 male, 3/5 female at 200 ppm - cytoplasmic vacuolation of occasional individual hepatocytes
 - reversible

Chronic: 50, 100, 200 ppm

Treatment related

- fatty changes/fatty degeneration
in liver.

- only Treatment related

lesion

See point 2 in MTD
article under
Hepatopathology