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HASKELL LABORATORY REPORT NO. 793-81 [REDACTED]

Material Tested

Haskell No.

13,783 [REDACTED]

Studies Initiated/Completed

10/27/80 - 11/21/81

1/5/81 - 1/30/81

Material Submitted by

[REDACTED]
Polymer Products Department
Washington Works
Parkersburg, WV

SUBACUTE INHALATION TOXICITY STUDY IN RATS

Summary:

In 2 separate experiments, male and female Crl:CD® rats were exposed to [REDACTED] in air. In each study, groups of 10 rats were exposed to design concentrations of either 0, 500, 5000, or 50,000 ppm for periods of 6 hours/day, 5 days/week for 2 weeks. The actual test concentrations for the male exposures were 541, 4750, and 46,300 ppm; female exposures were 473, 5140 and 46,800 ppm.

Clinical observations of test rats during exposure were indistinguishable from those of controls. Male and female rats in all test groups showed a normal rate of weight gain throughout the study.

Clinical chemistry measurements on rats exposed to 500 ppm showed no compound-related changes. Following 10 exposures male rats exposed to 50,000 ppm tended to have significantly lower platelet counts and to excrete more fluoride in the urine than the controls. Female rats exposed to 50,000 ppm tended to excrete more fluoride and urobilinogen in the urine than the controls. Females exposed to 5000 and 50,000 ppm had significantly more monocytes in the blood than the controls. No compound-related changes were observed 14 days post-exposure.

Pathologic examination showed no compound-related macroscopic or microscopic changes in any rats exposed to [REDACTED]

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A comparison of organ to body weight ratios between exposed rats and controls showed that following the 10th exposure, kidney weights were significantly higher than controls in both male and female rats exposed to 50,000 ppm. Liver weights were significantly higher than controls in male rats exposed to 50,000 ppm. Fourteen days later these liver and kidney effects were still seen in male rats but had subsided in females. The significance of these effects is difficult to interpret since no specific microscopic lesions were observed in any of the rats exposed to [REDACTED]

I. Introduction:

In 2 separate experiments, male and female rats were exposed to [REDACTED] in air. The purpose of these studies was to determine the effects of [REDACTED] after repeated inhalation exposure. Design concentrations were 0 ppm (Group I), 500 [REDACTED] (Group II), 5000 ppm (Group III) and 50,000 ppm (Group IV)

II. Procedure:

A. Animal: Male and female Crl:CD[®] rats were housed 2/cage in 8" x 8" x 14" stainless steel cages and provided Purina Certified Rodent Chow[®] #5002 and water ad libitum. Rats were observed for general suitability for 1 week prior to testing.

B. Exposure Protocol: In the first experiment, male rats (weighing 230 to 262 g), were exposed whole-body to vaporized [REDACTED] 6 hours/day, 5 days/week, for 2 weeks. In the second experiment, female rats (weighing 165 to 210 g) were exposed in the same manner. Control rats (males weighing 230 to 279 g; females weighing 183 to 216 g) were simultaneously exposed to air only. All rats were weighed and observed daily (except weekends) through the exposure period and for 14 days post-exposure.

C. Generation: Atmospheres were generated by syringe driving the liquid [REDACTED] through a Spraying Systems nebulizer onto the heated surface (50°C) of a round-bottom flask. Dilution air carried the resulting vapors into a 20 L glass exposure chamber.

D. Analytical: [REDACTED] vapors were analyzed on a Hewlett Packard 5710 Gas Chromatograph (GC) with a flame ionization detector. The column used was a 6' x 1/4" glass coil packed with 10% SE-30 on 60/80 mesh Chromosorb[®] W-AW-DMCS. The column temperature was 145°C.

Gas standards were prepared daily by air dilution of [REDACTED] vapors in calibrated glass bottles. Samples of chamber air were collected at half-hour intervals. Standards and samples were injected into the GC by gastight syringe. Atmospheric concentrations were calculated from the standard curve and are expressed as the mean concentration for each 6-hour exposure.

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E. Clinical Measurements^{1,2}: Clinical laboratory measurements were made on urine samples collected overnight following the 9th exposure and the 13th day of recovery. Analysis included a quantitative measure of the volume, osmolality and pH, and semi-quantitative tests for occult blood, protein, sugar, bilirubin, acetone, and urobilinogen. Each specimen was noted for color and appearance and the sediment from pooled specimens examined microscopically. The concentration of fluoride and total fluoride were also measured.

Blood samples were taken from the rats' tails after the 10th exposure and the 14th day of recovery for the measurement of the following: erythrocytes, hemoglobin, mean corpuscular volume, platelets, leukocytes and relative number of neutrophils, lymphocytes, eosinophils, monocytes and basophils. The hematocrit, mean corpuscular hemoglobin and mean corpuscular hemoglobin concentration were calculated from these data. Alkaline phosphatase, glutamic-pyruvic transaminase, glutamic-oxaloacetic transaminase, urea nitrogen, creatinine, total protein and cholesterol were also measured.

F. Pathology³: After the 10th exposure, 5 rats from each group were selected at random and sacrificed for gross and histopathological examination. Remaining rats were sacrificed on the 14th day of recovery for identical examinations. Organs and tissues examined included the following: liver, kidneys, heart, spleen, bone marrow, thymus, brain, eyes, skin, ear, adrenals, pancreas, lungs, trachea, thyroid, parathyroid, lymph node, esophagus, stomach, small intestines, colon, and cecum. Also examined were testes and epididymides in males; ovaries, uterus, bladder, and vagina in females.

G. Organ and Body Weight Analysis: At each sacrifice organ weights and organ to body weight ratios were determined for the heart, liver, lungs, kidneys, spleen, testes (males), ovaries (females) and thymus. These data are detailed in Appendices I and II.

¹ Walter B. Koniecki and John R. Barnes, "Subacute Inhalation of [REDACTED] Clinical Laboratory Report, [REDACTED] H-13,783, January 16, 1981.

² Walter B. Koniecki and John R. Barnes, "Subacute Inhalation of [REDACTED] Clinical Laboratory Report, [REDACTED] H-13,783, March 20, 1981.

³ Edwin F. Stula and William C. Krauss, "Pathology Report No. 19-81", [REDACTED] H-13,783, June 17, 1981.

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A. Exposure Data

Exposure No.	Group II			Group III			Group IV		
	Design Level - 500-1000			Design Level - 5000-10000			Design Level - 50000-100000		
	Mean	S.D.	Range	Mean	S.D.	Range	Mean	S.D.	Range
1	523	123	388-702	4630	636	3080-5170	46,500	10,100	30,400-61,000
2	606	59.6	457-705	3750	497	1440-4260	44,100	7,070	29,500-52,500
3	477	49.7	417-577	4970	506	4080-5960	55,000	6,270	44,700-70,500
4	596	71.6	507-755	4890	427	3920-5470	40,000	4,450	39,000-51,200
5	626	94.4	457-805	5360	422	4540-5910	44,500	5,540	36,700-51,900
6	517	97.4	300-606	4200	298	1780-4670	39,400	5,100	17,100-42,100
7	577	65.6	497-686	5130	361	4420-5500	47,000	4,960	40,300-54,700
8	510	58.6	400-596	4900	659	3290-5700	47,000	9,120	19,500-65,000
9	509	50.7	417-577	4720	278	4220-5090	47,100	3,270	36,300-57,000
10	462	85.5	310-506	4050	278	4390-5320	44,800		40,100-48,600
Overall*	541	93.4	308-805	4750	600	3290-5960	46,300	7,250	29,500-70,500

Exposure No.	Group II			Group III			Group IV		
	Design Level - 500-1000			Design Level - 5000-10000			Design Level - 50000-100000		
	Mean	S.D.	Range	Mean	S.D.	Range	Mean	S.D.	Range
1	345	24.7	314-393	5010	263	4670-5290	49,700	5,410	37,900-52,700
2	427	189	149-706	5220	765	4540-6790	35,100	7,540	22,900-44,600
3	428	75.5	208-527	6267	555	5480-6960	47,200	3,970	39,000-52,500
4	555	169	249-905	5000	557	3990-6410	46,100	3,690	43,100-52,000
5	515	252	163-1090	4030	701	3080-5460	49,500	3,000	45,100-50,900
6	450	50.7	383-581	4760	1140	1500-5600	48,300	2,760	41,400-51,500
7	435	195	134-791	5120	943	2470-6220	49,000	4,040	40,600-56,900
8	474	96.2	337-663	5200	157	5020-5580	42,300	9,270	33,800-64,400
9	510	154	302-870	4020	240	4430-5130	48,000	2,900	41,300-54,300
10	524	229	347-1040	5230	1200	2330-6560	51,400	2,800	46,000-56,000
Overall*	473	170	134-1090	5140	835	1500-6960	46,800	6,010	27,900-64,400

*Mean of all samples from 10 exposures

B. Clinical Observations: During exposure, clinical observations of test rats were indistinguishable from those of controls.

C. Clinical Chemistry: Clinical chemistry measurements on Group II rats showed no compound-related changes. Following 10 exposures, male Group IV rats tended to have significantly lower platelet counts and to excrete more fluoride in the urine than the controls. Female Group IV rats tended to excrete more fluoride and urobilinogen in the urine than the controls. Group III and Group IV females had significantly more monocytes in the blood than the controls. No compound-related changes were observed 14 days post-exposure.

D. Pathology: No compound-related macroscopic or microscopic changes were observed in any of the rats exposed to [REDACTED]

E. Body and Organ Weight Analysis: Male and female rats in all test groups showed a normal rate of weight gain throughout the study (Figures 1 and 2). Female rats in Group IV had significantly lower body weights than controls during the exposure period, however, this was so prior to the start of the test and is not considered exposure-related.

A comparison of organ to body weight ratios between exposed rats and controls showed a few differences. Following the 10th exposure, kidney weights were significantly higher than controls in both male and female Group IV rats; liver weights were significantly higher than controls in male Group IV rats only. These liver and kidney effects were still evident in males after 14 days but had subsided in females. The significance of these effects is difficult to interpret since no specific microscopic lesions were observed in any of the rats exposed to [REDACTED]

* [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

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GROWTH CURVE

OWLE RATS

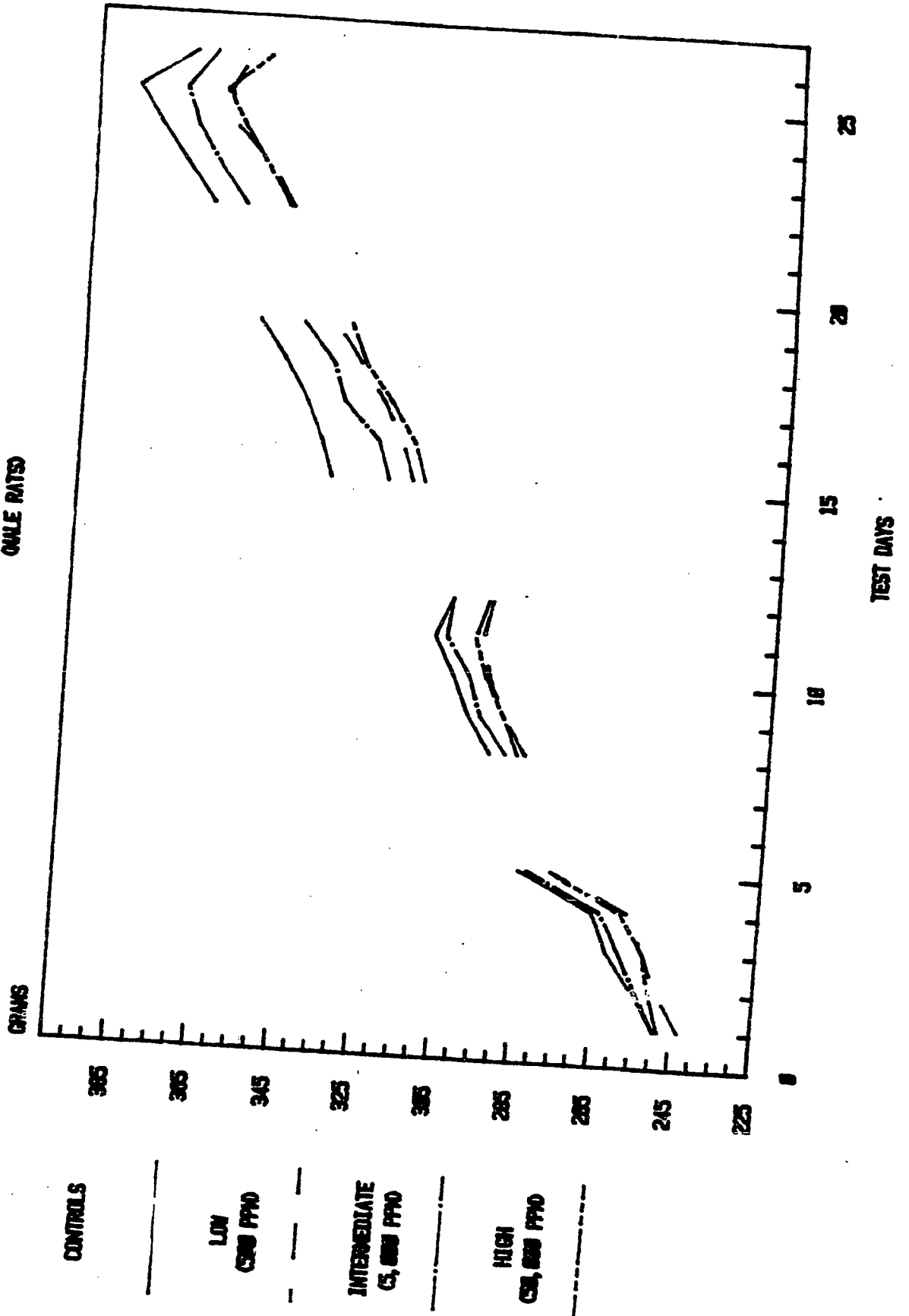


FIGURE 1

GROWTH CURVE (FEMALES)

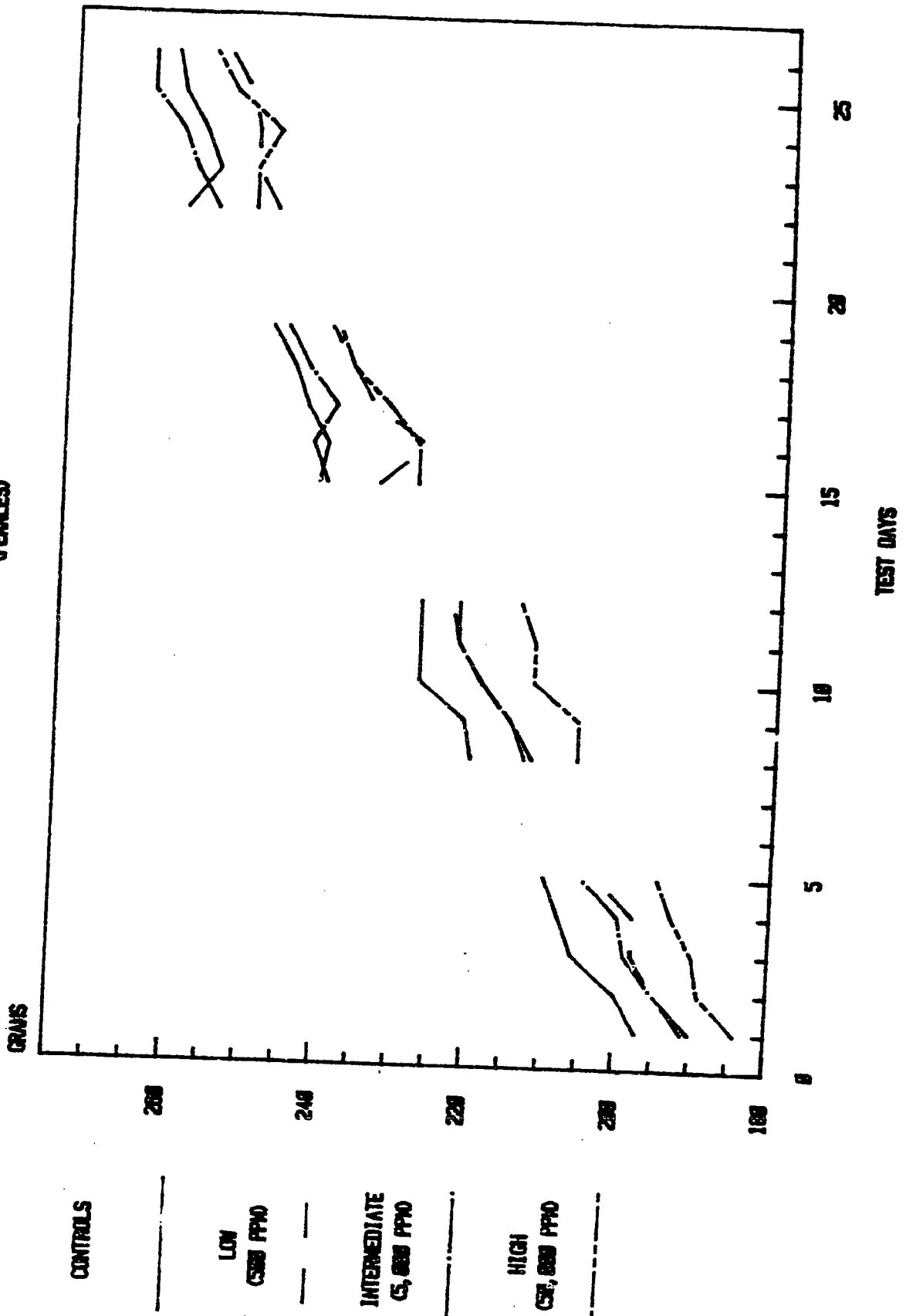


FIGURE 2

APPENDIX I

BODY WEIGHT SUMMARY

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(MALE) - BODY WEIGHT SUMMARY

INTERVALS IN TEST DAYS					
GROUP	1.	2.	3.	4.	5.
CONTROLS	249.3000	254.5000	262.3000	265.6000	283.2000
LOW (500 PPM)	242.5000	249.0000	253.4000	257.2000	277.4000
INT. (5,000 PPM)	249.0000	253.5000	259.2000	263.5000	282.8000
HIGH (50,000 PPM)	248.2000	250.7000	253.3000	258.6000	277.3000
F RATIO(1)	0.875	0.386	1.101	0.900	0.808
LSD(2)	9.8247	11.6802	12.1913	12.0295	12.6372
DUNNETT(3)	11.9542	14.2119	14.8339	14.6369	15.4006
WMS(4)	117.1167	165.5306	180.3389	175.5806	194.3806

INTERVALS IN TEST DAYS					
GROUP	8.	9.	10.	11.	12.
CONTROLS	293.7000	299.8000	303.9000	309.4000	305.0000
LOW (500 PPM)	284.8000	290.7000	295.1000	297.1000	294.5000
INT. (5,000 PPM)	289.8000	296.5000	300.4000	305.7000	304.7000
HIGH (50,000 PPM)	287.0000	290.5000	295.9000	299.0000	296.9000
F RATIO(1)	0.609	0.765	0.692	1.206	0.937
LSD(2)	14.1238	14.9761	14.1802	15.0118	15.9351
DUNNETT(3)	17.1851	18.2222	17.2538	18.2656	19.3890
WMS(4)	242.0361	272.1306	243.9750	273.4278	308.0972

INTERVALS IN TEST DAYS					
GROUP	15.	16.	17.	18.	19.
CONTROLS	336.6000	339.6000	345.2000	350.4000	356.8000
LOW (500 PPM)	317.4000	319.6000	325.4000	331.0000	338.4000
INT. (5,000 PPM)	322.6000	326.0000	334.8000	338.4000	346.0000
HIGH (50,000 PPM)	314.2000	316.8000	323.2000	330.2000	334.0000
F RATIO(1)	1.492	1.297	1.341	1.034	1.229
LSD(2)	24.2828	26.7418	26.0187	27.5897	26.9986
DUNNETT(3)	30.1258	33.1766	32.2794	34.2284	33.4951
WMS(4)	328.0250	397.8250	376.6000	423.4500	405.5000

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INTERVALS IN TEST DAYS					
GROUP	22.	23.	24.	25.	26.
CONTROLS	370.2000	376.2000	384.4000	389.6000	376.4000
LOW (500 PPM)	350.0000	356.4000	364.7000	368.2000	362.1000
INT. (5.000 PPM)	361.8000	368.8000	374.6000	378.0000	370.8000
HIGH (50.000 PPM)	350.8000	357.0000	362.6000	367.6000	356.6000
F RATIO(1)	1.087	0.935	1.078	1.012	1.052
LSD(2)	27.7262	29.8085	29.0101	30.7992	25.7577
DUNNETT(3)	34.3977	36.9812	35.9907	38.2102	31.9571
WMS(4)	427.6500	494.3000	468.1750	527.7000	369.1250

(1) RATIO OF AMONG- TO WITHIN-GROUP VARIATION--ONE-FACTOR ANALYSIS OF VARIANCE.

(2) LEAST SIGNIFICANT DIFFERENCE--GIVEN A SIGNIFICANT ($\alpha=0.05$) F RATIO, ANY TWO MEANS DIFFERING BY MORE THAN THE LSD ARE SIGNIFICANTLY DIFFERENT WITH A VARIABLE-WISE FALSE POSITIVE (α) ERROR RATE OF 0.05.

(3) DUNNETT TEST--ANY TREATMENT MEAN DIFFERING FROM THE CONTROL MEAN BY MORE THAN THE DUNNETT STATISTIC IS SIGNIFICANTLY DIFFERENT FROM THE CONTROL MEAN WITH A VARIABLE-WISE FALSE POSITIVE (α) ERROR RATE OF 0.05.

(4) WITHIN-GROUP MEAN SQUARE.

+ SIGNIFICANTLY DIFFERENT ($P<0.05$) FROM CONTROL GROUP BY LSD.

* SIGNIFICANTLY DIFFERENT ($P<0.05$) FROM CONTROL GROUP BY DUNNETT TEST AND LSD.

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(FEMALE) - BODY WEIGHT SUMMARY

INTERVALS IN TEST DAYS

GROUP	1.	2.	3.	4.	5.
CONTROLS	197.1000	200.1000	205.7000	207.7000	210.0000
LOW (500 PPM)	191.1000	194.8000	197.8000	198.4000	203.3000
INT. (5,000 PPM)	190.4000	195.2000	199.2000	200.1000	205.1000
HIGH (50,000 PPM)	184.4000*	188.5000*	189.9000*	192.7000*	194.6000*
F RATIO(1)	2.457	1.972	2.928*	2.723	3.102*
LSD(2)	9.5102	9.7221	10.8859	10.7646	10.4713
DUNNETT(3)	11.5716	11.8294	13.2454	13.0979	12.7409
WMS(4)	109.7389	114.6833	143.7833	140.5972	133.0389

INTERVALS IN TEST DAYS

GROUP	8.	9.	10.	11.	12.
CONTROLS	220.3000	220.7000	226.8000	227.2000	226.7000
LOW (500 PPM)	214.4000	215.4000	219.3000	222.0000	212.7000
INT. (5,000 PPM)	212.9000	214.8000	219.3000	222.2000	222.3000
HIGH (50,000 PPM)	205.6000*	206.2000*	211.5000*	212.3000*	213.5000*
F RATIO(1)	1.946	2.341	2.604	2.495	1.771
LSD(2)	12.4439	11.2596	11.1129	11.3282	12.0085
DUNNETT(3)	15.1411	13.7002	13.5216	13.7835	14.6113
WMS(4)	187.8833	153.6250	149.8417	155.7028	174.9667

INTERVALS IN TEST DAYS

GROUP	15.	16.	17.	18.	19.
CONTROLS	240.6000	240.4000	243.0000	245.2000	248.0000
LOW (500 PPM)	232.8000	226.8000	234.4000	236.6000	240.4000
INT. (5,000 PPM)	239.6000	242.0000	239.4000	243.4000	246.4000
HIGH (50,000 PPM)	228.2000	228.0000	231.8000	236.8000	239.2000
F RATIO(1)	1.381	2.662	0.773	0.695	0.780
LSD(2)	14.9675	14.7177	17.1017	15.9979	14.7680
DUNNETT(3)	18.5690	18.2591	21.2168	19.8474	18.3215
WMS(4)	124.6250	120.5000	152.7000	142.3750	121.3250

GROUP	INTERVALS IN TEST DAYS				
	22.	23.	24.	25.	26.
CONTROLS	260.2000	255.6000	257.8000	261.2000	261.6000
LOW (500 PPM)	248.2000	250.8000	250.8000	252.0000	254.8000
INT. (5,000 PPM)	256.2000	259.0000	261.2000	265.2000	265.4000
HIGH (50,000 PPM)	250.6000	250.8000	248.2000	254.4000	257.2000
F RATIO(1)	0.746	0.475	0.892	0.706	0.484
LSD(2)	18.8290	17.4000	19.1473	21.6987	20.2670
DUNNETT(3)	23.3597	21.5868	23.7546	26.9199	25.1437
WMS(4)	197.2250	168.4250	203.9500	261.9250	228.5000

(1) RATIO OF AMONG- TO WITHIN-GROUP VARIATION--ONE-FACTOR ANALYSIS OF VARIANCE.

(2) LEAST SIGNIFICANT DIFFERENCE--GIVEN A SIGNIFICANT ($\alpha=0.05$) F RATIO, ANY TWO MEANS DIFFERING BY MORE THAN THE LSD ARE SIGNIFICANTLY DIFFERENT WITH A VARIABLE-WISE FALSE POSITIVE (α) ERROR RATE OF 0.05.

(3) DUNNETT TEST--ANY TREATMENT MEAN DIFFERING FROM THE CONTROL MEAN BY MORE THAN THE DUNNETT STATISTIC IS SIGNIFICANTLY DIFFERENT FROM THE CONTROL MEAN WITH A VARIABLE-WISE FALSE POSITIVE (α) ERROR RATE OF 0.05.

(4) WITHIN-GROUP MEAN SQUARE.

+ SIGNIFICANTLY DIFFERENT ($P<0.05$) FROM CONTROL GROUP BY LSD.

* SIGNIFICANTLY DIFFERENT ($P<0.05$) FROM CONTROL GROUP BY DUNNETT TEST AND LSD.

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APPENDIX II

ORGAN & BODY WEIGHT DATA

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(MALE) - ORGAN & BODY WEIGHT MEAN ABSOLUTE DATA
RATS SACRIFICED AFTER 10 EXPOSURES

GROUP	FINAL WGT.	HEART	LUNGS	LIVER	SPLEEN
CONTROLS	298.4000	1.0100	1.9280	10.8380	.6940
LOW (500 PPM)	292.8000	.7400	1.8320	10.7260	.5940
INT. (5,000 PPM)	303.8000	1.0760	1.8240	11.9740	.6480
HIGH (50,000 PPM)	295.4000	1.0920	1.7360	13.2220*	.6860
F RATIO(1)	.456	2.517	.603	4.046*	.900
LSD(2)	20.9699	.1312	.3031	1.7388	.1443
DUNNETT(3)	26.0157	.1628	.3761	2.1572	.1790
WMS(4)	244.6250	.0096	.0511	1.6819	.0116

GROUP	KIDNEY	TESTIS	THYMUS
CONTROLS	2.2520	2.9360	.6660
LOW (500 PPM)	2.2420	3.1300	.7600
INT. (5,000 PPM)	2.3760	2.8580	.7520
HIGH (50,000 PPM)	2.6820*	2.9940	.6960
F RATIO(1)	3.381*	1.401	.775
LSD(2)	.3347	.2907	.1536
DUNNETT(3)	.4152	.3606	.1906
WMS(4)	.0623	.0470	.0131

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant (alpha=0.05) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (alpha) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (alpha) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different (P<0.05) from control group by LSD.
* Significantly different (P<0.05) from control group by Dunnett test and LSD.
* Significant at the 0.05 probability level.

(MALE) - ORGAN & BODY WEIGHT MEAN RELATIVE DATA
RATS SACRIFICED AFTER 10 EXPOSURES

GROUP	HEART	LUNGS	LIVER	SPLEEN	KIDNEY
CONTROLS	.3391	.6456	3.6314	.2315	.7521
LOW (500 PPM)	.3213	.6296	3.6604	.2030	.7658
INT. (5,000 PPM)	.3543	.6067	3.9419	.2131	.7824
HIGH (50,000 PPM)	.3693	.5875	4.4620*	.2319	.9076*
F RATIO(1)	2.484	.587	7.108*	1.025	5.764*
LSD(2)	.0391	.1036	.4330	.0422	.0893
DUNNETT(3)	.0485	.1285	.5372	.0524	.1108
WMS(4)	.0009	.0060	.1043	.0010	.0044

GROUP	TESTIS	THYMUS
CONTROLS	.9853	.2234
LOW (500 PPM)	1.0769	.2579
INT. (5,000 PPM)	.9415	.2472
HIGH (50,000 PPM)	1.0136	.2353
F RATIO(1)	1.787	1.104
LSD(2)	.1273	.0426
DUNNETT(3)	.1579	.0528
WMS(4)	.0090	.0010

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant (alpha=0.05) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (alpha) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (alpha) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different (P<0.05) from control group by LSD.
* Significantly different (P<0.05) from control group by Dunnett test and LSD.
* Significant at the 0.05 probability level.

(MALE) - ORGAN & BODY WEIGHT MEAN ABSOLUTE DATA
RATS SACRIFICED AFTER 14-DAY OBSERVATION

GROUP	FINAL WGT.	HEART	LUNGS	LIVER	SPLEEN
CONTROLS	376.4000	1.2140	1.9440	14.3080	.6580
LOW (500 PPM)	362.2000	1.1420	1.9080	13.0680	.7220
INT. (5,000 PPM)	370.8000	1.1580	2.1440	15.2000	.7020
HIGH (50,000 PPM)	356.6000	1.1720	1.9280	15.2600	.6720
F RATIO(1)	1.052	.420	2.467	2.298	.434
LSD(2)	25.7592	.1428	.2093	2.0258	.1316
DUNNETT(3)	31.9575	.1772	.2597	2.5133	.1633
WMS(4)	369.1250	.0113	.0244	2.2831	.0096

GROUP	KIDNEY	TESTIS	THYMUS
CONTROLS	2.7760	3.3140	.7760
LOW (500 PPM)	2.5740	3.2940	.7540
INT. (5,000 PPM)	2.9380	3.2720	.8060
HIGH (50,000 PPM)	3.0220	3.1740	.8660
F RATIO(1)	2.495	.288	.553
LSD(2)	.3747	.3470	.1958
DUNNETT(3)	.4649	.4304	.2429
WMS(4)	.0781	.0670	.0213

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant ($\alpha=0.05$) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (α) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (α) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different ($P<0.05$) from control group by LSD.
* Significantly different ($P<0.05$) from control group by Dunnett test and LSD.

(MALE) - ORGAN & BODY WEIGHT MEAN RELATIVE DATA
RATS SACRIFICED AFTER 14-DAY OBSERVATION

GROUP	HEART	LUNGS	LIVER	SPLEEN	KIDNEY
CONTROLS	.3234	.5179	3.9095	.1751	.7401
LOW (500 PPM)	.3154	.5278	3.6062	.1991	.7123
INT. (5,000 PPM)	.3116	.5782+	4.0969	.1893	.7908
HIGH (50,000 PPM)	.3286	.5400	4.2715+	.1897	.8483+
F RATIO(1)	.475	2.125	3.719*	.758	3.143
LSD(2)	.0334	.0543	.4602	.0340	.1013
DUNNETT(3)	.0415	.0673	.5709	.0421	.1257
WMS(4)	.0006	.0016	.1178	.0006	.0057

GROUP	TESTIS	THYMUS
CONTROLS	.8841	.2052
LOW (500 PPM)	.9095	.2082
INT. (5,000 PPM)	.8829	.2176
HIGH (50,000 PPM)	.8935	.2420
F RATIO(1)	.105	1.148
LSD(2)	.1135	.0467
DUNNETT(3)	.1408	.0579
WMS(4)	.0072	.0012

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant ($\alpha=0.05$) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (α) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (α) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different ($P<0.05$) from control group by LSD.
* Significantly different ($P<0.05$) from control group by Dunnett test and LSD.
* Significant at the 0.05 probability level.

(FEMALE) - ORGAN & BODY WEIGHT MEAN ABSOLUTE DATA
RATS SACRIFICED AFTER 10 EXPOSURES

GROUP	FINAL WGT.	HEART	LUNGS	LIVER	SPLEEN
CONTROLS	222.0000	.7780	1.3720	9.0640	.6040
LOW (500 PPM)	223.2000	.8640	1.3780	8.5200	.5140
INT. (5,000 PPM)	210.4000	.8260	1.4420	8.5640	.5020
HIGH (50,000 PPM)	208.8000	.7560	1.3900	8.3500	.5420
F RATIO(1)	2.432	1.772	1.678	.731	1.377
LSD(2)	14.5132	.1091	.2181	.8966	.1163
DUNNETT(3)	18.0054	.1354	.2706	1.1124	.1443
WMS(4)	117.1750	.0066	.0265	.4473	.0075

GROUP	KIDNEY	THYMUS
CONTROLS	1.7880	.6020
LOW (500 PPM)	1.8460	.7160
INT. (5,000 PPM)	1.8520	.5740
HIGH (50,000 PPM)	1.9180	.6740
F RATIO(1)	.801	1.220
LSD(2)	.1782	.1767
DUNNETT(3)	.2210	.2193
WMS(4)	.0177	.0174

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant ($\alpha=0.05$) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (α) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (α) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different ($P<0.05$) from control group by LSD.
* Significantly different ($P<0.05$) from control group by Dunnett test and LSD.

(FEMALE) - ORGAN & BODY WEIGHT MEAN RELATIVE DATA
RATS SACRIFICED AFTER 14-DAY OBSERVATION

GROUP	HEART	LUNGS	LIVER	SPLEEN	KIDNEY
CONTROLS					
LOW (500 PPM)	.3346	.6989	3.6553	.2336	.7573
INT. (5,000 PPM)	.3541	.6265+	3.7989	.2323	.7913
HIGH (50,000 PPM)	.3704	.6570	3.8730	.1939	.6087
	.3535	.6594	3.8890	.2382	.7702
F RATIO(1)	.899	2.173	.407	1.722	.658
LSD(2)	.0463	.0604	.5015	.0469	.0841
DUNNETT(3)	.0574	.0749	.6221	.0582	.1044
WMS(4)	.0012	.0020	.1399	.0012	.0039

GROUP	OVARIES	THYMUS
CONTROLS		
LOW (500 PPM)	.0602	.2647
INT. (5,000 PPM)	.0636	.3071
HIGH (50,000 PPM)	.0634	.2605
	.0593	.2611
F RATIO(1)	.167	1.173
LSD(2)	.0162	.0625
DUNNETT(3)	.0201	.0776
WMS(4)	.0001	.0022

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant (alpha=0.05) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (alpha) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (alpha) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different (P<0.05) from control group by LSD.
* Significantly different (P<0.05) from control group by Dunnett test and LSD.

(FEMALE) - ORGAN & BODY WEIGHT MEAN RELATIVE DATA
RATS SACRIFICED AFTER 10 EXPOSURES

GROUP	HEART	LUNGS	LIVER	SPLEEN	KIDNEY
CONTROLS	.3514	.7034	4.0831	.2719	.5074
LOW (500 PPM)	.3877	.7071	3.8187	.2301	.5274
INT. (5,000 PPM)	.3914	.6863	4.0657	.2384	.5810
HIGH (50,000 PPM)	.3626	.6668	4.2426	.2595	.9186*
F RATIO(1)	1.466	.425	2.619	1.436	3.908*
LSD(2)	.0480	.0869	.3243	.0479	.0768
DUNNETT(3)	.0596	.1078	.4023	.0594	.0953
WMS(4)	.0013	.0042	.0585	.0013	.0033

GROUP	THYMUS
CONTROLS	.2698
LOW (500 PPM)	.3212
INT. (5,000 PPM)	.2727
HIGH (50,000 PPM)	.3235
F RATIO(1)	1.250
LSD(2)	.0792
DUNNETT(3)	.0982
WMS(4)	.0035

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant (alpha=0.05) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (alpha) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (alpha) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different (P<0.05) from control group by LSD.
* Significantly different (P<0.05) from control group by Dunnett test and LSD.
& Significant at the 0.05 probability level.

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Company Sanitized. Does not contain TSCA CB1

(FEMALE) - ORGAN & BODY WEIGHT MEAN ABSOLUTE DATA
RATS SACRIFICED AFTER 14-DAY OBSERVATION

GROUP	FINAL WGT.	HEART	LUNGS	LIVER	SPLEEN
CONTROLS	261.6000	.8740	1.8260	9.5800	.6120
LOW (500 PPM)	254.8000	.9040	1.5960+	9.6800	.5940
INT. (5,000 PPM)	265.4000	.9840	1.7420	10.2700	.5140
HIGH (50,000 PPM)	257.2000	.9100	1.7020	10.0040	.6140
F RATIO(1)	.484	.880	1.797	.363	1.003
LSD(2)	20.2670	.1494	.2136	1.5669	.1413
DUNNETT(3)	25.1437	.1853	.2650	1.9439	.1753
WMS(4)	228.5000	.0124	.0254	1.3658	.0111

GROUP	KIDNEY	OVARIES	THYMUS
CONTROLS	1.9780	.1560	.7000
LOW (500 PPM)	2.0180	.1620	.7820
INT. (5,000 PPM)	2.1460	.1680	.6880
HIGH (50,000 PPM)	1.9760	.1520	.6720
F RATIO(1)	.993	.302	.647
LSD(2)	.2408	.0382	.1827
DUNNETT(3)	.2988	.0473	.2266
WMS(4)	.0323	.0008	.0186

- (1) Ratio of among- to within-group variation--one-factor analysis of variance.
(2) Least significant difference--given a significant ($\alpha=0.05$) F ratio, any two means differing by more than the LSD are significantly different with a variable-wise false positive (α) error rate of 0.05.
(3) Dunnett test--Any treatment mean differing from the control mean by more than the Dunnett statistic is significantly different from the control mean with a variable-wise false positive (α) error rate of 0.05.
(4) Within-group Mean Square.
+ Significantly different ($P<0.05$) from control group by LSD.
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