塩化メチルのラット及びマウスを用いた
吸入によるがん原性予備試験報告書

APPENDIX

(B1-1～C2)
13 週間試験：ラット/0191；マウス/0192

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APPENDIX B 1-1

CLINICAL OBSERVATION : SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
LOCOMOTOR MOVEMENT DECR	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	0
LATERAL	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	0
WASTING	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	0
PILOERECTION	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	0
EXOPHTHALMOS	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
EYE OPACITY	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	1	1	1	1	1	1	1	1	1	1	1	1	1
	750 ppm	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CORNEAL OPACITY	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	1	1	1	1	1	1	1	1	1	1	1	1	1
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ANTERIOS CHAMBER OPACITY	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IRREGULAR BREATHING	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	0
ABNORMAL RESPIRATION	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	0

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
SUBNORMAL TEMP	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	0

APPENDIX B 1-2

CLINICAL OBSERVATION : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day												
		0-0	1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
SOILED PERI GENITALIA	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	190 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	380 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	750 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	1	1	1	1	0	0	0	0	0	0	0
	3000 ppm	0	0	1	0	0	0	0	0	0	0	0	0	0	0

APPENDIX B 1-3

CLINICAL OBSERVATION : SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
HUNCHBACK POSITION	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	300 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	440 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	670 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	1	0	0	0	0	-	-	-	-
PILOERECTION	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	300 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	440 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	670 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	1	0	0	0	0	-	-	-	-
IRREGULAR BREATHING	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	300 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	440 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	670 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	1	0	0	0	0	-	-	-	-
ABNORMAL RESPIRATION	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	300 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	440 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	670 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	1	0	0	0	0	-	-	-	-

APPENDIX B 1-4

CLINICAL OBSERVATION : SUMMARY, MOSUE: FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7	7-7	8-7	9-7	10-7	11-7	12-7	13-7
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
IRREGULAR BREATHING	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	300 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	440 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	670 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	1	-	-	-
ABNORMAL RESPIRATION	0 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	300 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	440 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	670 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1000 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1500 ppm	0	0	0	0	0	0	0	0	0	0	1	-	-	-

APPENDIX B 2-1

BODY WEIGHT CHANGES :SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
0 ppm	127± 5	158± 7	192± 8	213± 9	231± 10	249± 11	261± 11
190 ppm	127± 6	157± 9	185± 13	205± 13	225± 15	249± 15	262± 16
380 ppm	128± 6	154± 10	183± 11	202± 14	219± 15	237± 16	247± 17
750 ppm	127± 4	153± 6	178± 8*	195± 8**	206± 9**	217± 10**	222± 12**
1500 ppm	127± 6	146± 9*	165± 7**	179± 8**	186± 7**	191± 8**	191± 9**
3000 ppm	126± 5	133± 9**	130± 12**	145± 13**	139± 12**	139± 13**	139± 13**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
0 ppm	272± 14	285± 15	299± 18	306± 18	317± 19	325± 20	335± 20
190 ppm	272± 19	284± 20	302± 21	310± 20	318± 21	323± 20	330± 21
380 ppm	257± 18	267± 22	280± 27	287± 25	297± 24	303± 22	310± 21*
750 ppm	227± 15**	232± 15**	241± 15**	246± 15**	254± 14**	260± 15**	266± 14**
1500 ppm	190± 8**	190± 10**	195± 14**	195± 15**	199± 18**	203± 20**	210± 20**
3000 ppm	138± 12**	138± 14**	144± 17**	143± 17**	144± 15**	139± 19**	145± 17**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 2-2

BODY WEIGHT CHANGES : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
0 ppm	102± 3	117± 5	134± 4	140± 4	151± 5	160± 4	166± 6
190 ppm	103± 3	118± 4	130± 6	139± 8	147± 8	158± 10	164± 10
380 ppm	103± 3	118± 5	130± 6	137± 6	146± 7	156± 9	159± 9
750 ppm	102± 3	116± 5	126± 5*	132± 7*	138± 7**	146± 9**	148± 9**
1500 ppm	102± 3	112± 4	120± 6**	127± 5**	130± 5**	134± 6**	134± 7**
3000 ppm	102± 2	102± 4**	97± 8**	105± 7**	99± 7**	99± 9**	99± 8**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
0 ppm	169± 6	172± 7	177± 8	180± 8	182± 8	186± 9	189± 9
190 ppm	168± 11	172± 11	178± 11	180± 11	184± 12	188± 13	192± 11
380 ppm	163± 8	167± 8	171± 9	172± 11	177± 10	180± 11	181± 12
750 ppm	150± 8**	154± 8**	156± 10**	157± 11**	162± 9**	163± 9**	166± 9**
1500 ppm	134± 8**	132± 9**	136± 10**	135± 11**	136± 11**	137± 11**	138± 10**
3000 ppm	100± 10**	98± 8**	100± 8**	98± 9**	99± 7**	98± 7**	99± 6**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 2-3

BODY WEIGHT CHANGES :SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
0 ppm	23.3± 0.9	25.2± 0.7	26.1± 1.0	27.0± 0.8	27.8± 1.0	29.3± 1.2	30.3± 1.5
300 ppm	23.1± 0.9	25.0± 0.8	25.5± 1.1	26.2± 1.1	26.5± 1.2*	27.3± 1.1**	27.5± 1.1**
440 ppm	23.2± 1.0	24.9± 1.1	25.2± 1.5	25.8± 1.2*	26.2± 1.3*	26.7± 1.3**	27.2± 1.3**
670 ppm	23.5± 1.2	24.4± 1.4	24.8± 1.3*	25.1± 1.3**	25.2± 1.3**	25.6± 1.4**	25.8± 1.2**
1000 ppm	23.1± 0.8	23.4± 0.8**	23.9± 0.6**	24.2± 0.8**	24.3± 0.5**	24.6± 0.6**	24.7± 0.6**
1500 ppm	23.3± 0.9	22.9± 0.9**	22.5± 0.6**	23.4± 1.1**	23.2± 1.1**	22.7± 2.3**	24.4± 1.1**

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
0 ppm	30.9± 1.5	31.8± 1.5	33.2± 1.7	33.6± 1.8	34.7± 1.5	35.3± 1.6	36.5± 1.9
300 ppm	27.8± 1.2**	27.9± 1.3**	28.7± 1.4**	28.8± 1.4**	29.3± 1.4**	30.1± 1.3**	30.7± 1.4**
440 ppm	26.8± 1.3**	26.9± 1.3**	27.5± 1.4**	27.0± 1.4**	27.7± 1.2**	28.2± 1.3**	29.1± 1.8**
670 ppm	25.7± 0.9**	25.7± 1.0**	26.2± 1.2**	26.1± 1.0**	26.6± 1.1**	26.8± 1.0**	27.5± 1.1**
1000 ppm	24.7± 1.0**	24.2± 0.6**	24.9± 0.7**	24.8± 0.8**	25.5± 0.7**	26.2± 1.1**	26.8± 1.0**
1500 ppm	24.0± 1.2**	23.4± 1.0**	23.6± 0.7**	-	-	-	-

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 2-4

BODY WEIGHT CHANGES : SUMMARY, MOSUE: FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-7	2-7	3-7	4-7	5-7	6-7
0 ppm	18.7± 0.8	20.4± 0.5	21.2± 0.7	22.2± 0.8	22.8± 1.0	24.2± 0.7	23.9± 0.9
300 ppm	18.5± 1.1	19.9± 1.0	20.1± 1.2*	21.0± 0.9**	21.7± 1.3	22.7± 1.2**	22.9± 1.0*
440 ppm	18.6± 0.9	20.0± 1.1	20.4± 1.1	20.7± 1.0**	21.6± 1.0*	22.0± 0.8**	22.9± 1.1*
670 ppm	18.2± 0.6	19.0± 0.4**	20.1± 0.6*	20.5± 0.7**	21.2± 0.6**	21.4± 0.7**	22.1± 0.7**
1000 ppm	18.4± 0.9	18.8± 0.4**	19.2± 0.6**	19.9± 0.6**	20.5± 0.8**	20.6± 0.6**	21.4± 0.7**
1500 ppm	18.7± 1.1	18.8± 0.8**	18.3± 0.7**	19.3± 0.7**	19.9± 0.8**	19.8± 0.8**	20.5± 0.8**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 7-7	8-7	9-7	10-7	11-7	12-7	13-7
0 ppm	24.5± 0.9	24.6± 0.9	25.3± 1.4	25.4± 1.9	25.4± 0.8	26.2± 1.4	26.4± 1.6
300 ppm	23.3± 0.9*	23.8± 1.4	24.1± 1.1	23.9± 0.6	24.4± 0.9*	24.2± 1.0**	24.7± 1.4**
440 ppm	22.7± 0.9**	22.7± 0.7	23.1± 1.2**	23.0± 1.1*	23.8± 0.7**	24.1± 1.0**	24.3± 0.9**
670 ppm	21.9± 0.8**	22.2± 0.5**	22.6± 0.7**	22.5± 0.8**	23.1± 0.9**	23.2± 0.9**	23.5± 0.8**
1000 ppm	21.2± 0.8**	21.2± 0.5**	21.4± 0.5**	21.1± 0.7**	21.2± 0.6**	22.3± 0.8**	22.9± 0.7**
1500 ppm	20.8± 0.9**	20.6± 1.1**	20.9± 0.9**	20.3± 0.5 ?	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

APPENDIX B 3-1

FOOD CONSUMPTION CHANGES : SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
0 ppm	15.8± 0.9	17.4± 1.2	17.2± 1.2	17.5± 1.2	17.7± 1.2	17.2± 1.4	16.7± 1.5
190 ppm	15.7± 1.0	16.5± 1.9	16.3± 1.6	17.4± 1.9	18.0± 1.8	18.4± 1.4	17.6± 1.2
380 ppm	15.3± 1.4	16.5± 1.5	16.5± 1.5	17.1± 1.7	17.4± 1.9	17.1± 2.0	16.1± 1.6
750 ppm	15.2± 0.9	16.0± 1.3	15.5± 1.1	16.3± 1.7	15.2± 1.2*	15.0± 1.3*	14.3± 1.3**
1500 ppm	14.1± 0.8**	14.6± 0.5**	14.9± 0.8**	14.9± 1.2**	14.3± 1.5**	13.7± 1.6**	13.3± 1.7**
3000 ppm	12.8± 1.2**	11.4± 2.6**	12.2± 2.4**	11.6± 1.9**	11.2± 2.7**	11.7± 2.4**	10.8± 1.8**

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
0 ppm	16.8± 1.7	17.7± 1.7	16.8± 1.7	16.9± 1.5	16.5± 1.3	16.7± 1.2
190 ppm	16.8± 1.2	17.0± 1.6	16.6± 1.5	17.4± 1.4	16.6± 1.4	16.4± 1.2
380 ppm	15.9± 2.0	16.1± 2.3	15.7± 1.8	16.8± 1.8	16.1± 1.2	16.0± 1.0
750 ppm	13.8± 1.2**	13.3± 1.0**	13.2± 1.4**	14.6± 1.3*	14.3± 1.2	14.6± 1.0*
1500 ppm	12.4± 1.9**	11.4± 1.6**	10.4± 1.4**	12.4± 2.0**	12.6± 2.2**	13.1± 1.7**
3000 ppm	10.3± 1.7**	10.7± 1.6**	9.7± 2.3**	10.2± 2.0**	9.7± 3.5**	10.7± 3.1**

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 3-2

FOOD CONSUMPTION CHANGES : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
0 ppm	12.4± 0.7	13.1± 0.5	12.7± 1.0	13.0± 0.9	14.4± 1.3	12.8± 0.9	11.7± 1.0
190 ppm	12.4± 0.4	12.0± 0.6	12.2± 1.2	12.6± 1.0	13.1± 1.5	12.9± 1.3	11.6± 0.9
380 ppm	12.3± 0.8	12.4± 0.9	12.5± 1.0	12.9± 0.6	12.8± 1.0*	12.3± 0.7	11.5± 0.7
750 ppm	12.0± 0.7	12.4± 1.0	11.9± 1.2	12.4± 1.3	12.4± 1.3**	11.9± 1.0	10.7± 0.8
1500 ppm	11.0± 0.7**	11.0± 1.3**	11.7± 1.2	11.4± 1.3**	10.7± 1.3**	10.3± 1.1**	9.7± 0.9**
3000 ppm	9.9± 0.7**	7.9± 1.3**	8.6± 1.0**	7.3± 1.1**	7.4± 1.5**	7.9± 1.7**	8.2± 2.5**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
0 ppm	11.0± 0.9	12.1± 1.2	11.3± 0.9	11.3± 0.9	11.6± 1.0	11.7± 0.9
190 ppm	11.3± 0.9	12.2± 1.0	11.0± 0.8	11.3± 1.1	11.7± 1.3	12.1± 0.8
380 ppm	11.3± 0.7	11.3± 1.2	11.1± 0.8	11.6± 1.0	11.4± 0.9	11.2± 1.0
750 ppm	10.6± 0.8	10.6± 1.2*	10.3± 1.3	10.7± 1.0	10.4± 1.1	11.0± 0.9
1500 ppm	9.3± 1.3**	8.9± 1.0**	8.3± 1.1**	9.6± 1.3**	9.0± 1.5**	8.8± 1.0**
3000 ppm	7.2± 1.1**	7.2± 1.0**	6.5± 1.2**	7.1± 1.0**	7.2± 0.9**	7.6± 1.0**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 3-3

FOOD CONSUMPTION CHANGES : SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
0 ppm	4.3± 0.2	4.2± 0.2	4.2± 0.2	4.6± 0.3	4.6± 0.2	4.6± 0.3	4.4± 0.3
300 ppm	4.1± 0.3	4.0± 0.3	4.0± 0.3	4.3± 0.3	4.3± 0.3*	4.1± 0.3**	4.2± 0.3
440 ppm	4.1± 0.3	3.9± 0.3	4.0± 0.3	4.3± 0.2	4.3± 0.3	4.2± 0.2*	4.2± 0.2
670 ppm	3.8± 0.2*	4.2± 0.4	4.6± 0.3	4.5± 0.3	4.4± 0.3	4.4± 0.4	4.6± 0.4
1000 ppm	3.6± 0.2**	4.3± 0.4	4.6± 0.5	4.6± 0.4	4.6± 0.5	4.4± 0.3	4.3± 0.3
1500 ppm	2.3± 1.6**	5.1± 0.6**	5.1± 0.5**	4.9± 0.4	4.6± 0.8	5.3± 0.7**	4.9± 0.3*

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
0 ppm	4.6± 0.3	4.9± 0.3	4.7± 0.3	4.8± 0.3	4.8± 0.3	4.8± 0.4
300 ppm	4.3± 0.4	4.3± 0.3**	4.4± 0.3	4.3± 0.3**	4.5± 0.2	4.4± 0.3
440 ppm	4.4± 0.3	4.3± 0.3**	4.4± 0.3	4.5± 0.2	4.6± 0.4	4.7± 0.5
670 ppm	4.6± 0.4	4.6± 0.4	4.7± 0.3	4.7± 0.5	4.6± 0.4	4.5± 0.5
1000 ppm	4.5± 0.3	4.7± 0.4	4.6± 0.3	4.5± 0.5	4.7± 0.5	4.6± 0.3
1500 ppm	5.1± 0.4*	4.9± 0.4	1.7± 0.5**	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 3-4

FOOD CONSUMPTION CHANGES : SUMMARY, MOSUE : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 1-7(7)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
0 ppm	3.6± 0.3	3.6± 0.3	3.9± 0.4	4.1± 0.4	4.4± 0.4	4.2± 0.5	4.4± 0.5
300 ppm	3.5± 0.2	3.4± 0.4	3.8± 0.3	4.1± 0.4	4.2± 0.3	4.1± 0.3	4.3± 0.4
440 ppm	3.4± 0.3	3.5± 0.2	3.7± 0.3	4.0± 0.2	4.0± 0.3	4.0± 0.4	4.2± 0.5
670 ppm	3.1± 0.3**	3.7± 0.2	4.2± 0.5	4.1± 0.4	4.0± 0.3	4.2± 0.3	4.3± 0.3
1000 ppm	3.1± 0.2**	3.7± 0.2	4.2± 0.4	4.3± 0.3	4.3± 0.3	4.3± 0.5	4.2± 0.3
1500 ppm	3.0± 0.2**	3.6± 0.6	4.5± 0.3**	4.4± 0.5	4.4± 0.4	4.4± 0.4	4.3± 0.3

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

FOOD CONSUMPTION CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day(effective) 8-7(7)	9-7(7)	10-7(7)	11-7(7)	12-7(7)	13-7(7)
0 ppm	4.5± 0.5	4.6± 0.5	4.7± 0.4	4.5± 0.5	4.7± 0.5	4.7± 0.4
300 ppm	4.6± 0.5	4.5± 0.4	4.7± 0.4	4.7± 0.5	4.7± 0.5	4.7± 0.6
440 ppm	4.3± 0.4	4.3± 0.4	4.5± 0.5	4.6± 0.5	4.4± 0.4	4.3± 0.5
670 ppm	4.6± 0.3	4.6± 0.3	4.8± 0.4	4.8± 0.4	4.7± 0.4	4.5± 0.2
1000 ppm	4.4± 0.3	4.3± 0.3	4.4± 0.2	3.9± 1.2	4.4± 0.3	4.3± 0.5
1500 ppm	4.2± 0.8	4.3± 1.0	3.1± 1.3*	1.1± 1.6 ?	-	-

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

APPENDIX B 4-1

HEMATOLOGY : SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$		HEMOGLOBIN g/dℓ		HEMATOCRIT %		MCV f ℓ		MCH p g		MCHC g/dℓ		PLATELET $10^3/\mu\ell$	
0 ppm	10	9.67±	0.24	16.7±	0.4	47.3±	1.4	48.9±	1.1	17.2±	0.2	35.2±	0.9	765±	65
190 ppm	10	9.63±	0.21	16.7±	0.3	46.8±	1.0	48.5±	0.6	17.3±	0.3	35.6±	0.6	781±	54
380 ppm	9	9.73±	0.20	16.7±	0.3	47.5±	1.2	48.8±	0.7	17.2±	0.2	35.2±	0.8	814±	59
750 ppm	10	9.47±	0.24	16.6±	0.3	46.7±	0.7	49.3±	0.8	17.5±	0.3	35.5±	0.5	800±	39
1500 ppm	9	8.89±	0.30**	15.6±	0.6**	44.2±	1.8**	49.8±	0.7	17.6±	0.6	35.3±	1.2	909±	75**
3000 ppm	8	8.25±	0.27**	14.6±	0.6**	43.1±	1.8**	52.3±	0.8**	17.7±	0.4*	33.9±	0.6**	968±	130**

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
0 ppm	10	4.61±	1.86	1±	1	31±	6	1±	1	0±	0	5±	2	63±	7	0±	0
190 ppm	10	4.93±	1.25	0±	1	29±	6	2±	1	0±	0	4±	1	65±	6	0±	0
380 ppm	9	5.26±	1.04	0±	0	33±	8	2±	1	0±	0	4±	1	61±	9	0±	0
750 ppm	10	5.96±	2.16	1±	1	30±	8	1±	1	0±	0	5±	1	64±	8	0±	0
1500 ppm	9	4.54±	2.04	1±	1	33±	11	1±	1	0±	0	4±	1	61±	12	0±	0
3000 ppm	8	3.07±	0.93	0±	0	30±	6	1±	1	0±	0	4±	1	65±	6	0±	0

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

APPENDIX B 4-2

HEMATOLOGY : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
0 ppm	10	8.98± 0.35	16.6± 0.5	47.0± 1.8	52.3± 0.5	18.5± 0.2	35.3± 0.5	781± 175
190 ppm	10	8.86± 0.23	16.4± 0.4	45.9± 1.2	51.9± 0.4	18.5± 0.4	35.6± 0.6	816± 48
380 ppm	10	8.93± 0.20	16.6± 0.3	46.8± 1.2	52.4± 0.6	18.6± 0.3	35.5± 0.8	803± 64
750 ppm	10	8.97± 0.29	16.4± 0.6	46.2± 1.3	51.5± 0.7	18.3± 0.3	35.4± 0.5	861± 89
1500 ppm	10	8.73± 0.28	15.7± 0.5**	44.4± 1.4**	50.8± 0.5**	17.9± 0.5**	35.3± 1.0	846± 99
3000 ppm	10	8.04± 0.35**	14.5± 0.6**	43.1± 1.4**	53.7± 1.2	18.0± 0.4*	33.5± 0.6**	890± 150

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
0 ppm	10	3.41±	2.05	1±	1	30±	8	2±	1	0±	0	4±	1	64±	8	0±	0
190 ppm	10	3.50±	0.86	1±	1	25±	4	2±	1	0±	0	5±	1	68±	4	0±	0
380 ppm	10	2.98±	1.25	1±	1	27±	6	2±	1	0±	0	4±	1	66±	7	0±	0
750 ppm	10	3.28±	1.37	1±	1	26±	6	2±	1	0±	0	4±	1	68±	6	0±	0
1500 ppm	10	3.39±	0.98	1±	1	26±	4	2±	1	0±	0	4±	2	68±	4	0±	0
3000 ppm	10	3.61±	1.31	1±	1	23±	5	1±	1*	0±	0	5±	1	71±	6	0±	0

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

APPENDIX B 4-3

HEMATOLOGY : SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
0 ppm	10	1.59±	0.89	2±	1	19±	4	1±	1	0±	0	4±	1	75±	4	0±	0
300 ppm	9	0.88±	0.75	2±	1	20±	8	0±	1	0±	0	5±	1	74±	9	0±	0
440 ppm	10	1.20±	0.71	1±	1	19±	6	1±	1	0±	0	4±	2	75±	5	0±	0
670 ppm	10	1.29±	0.88	1±	1	16±	6	0±	1	0±	0	4±	2	79±	5	0±	0
1000 ppm	8	0.86±	0.41	1±	1	17±	10	1±	1	0±	0	4±	2	77±	9	0±	1
1500 ppm	0	-		-		-		-		-		-		-		-	

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
0 ppm	10	10.71± 0.22	16.0± 0.3	47.5± 1.2	44.4± 0.7	14.9± 0.2	33.7± 0.6	1451± 100
300 ppm	9	10.54± 0.34	15.9± 0.3	46.6± 0.9	44.3± 1.2	15.1± 0.3	34.1± 0.5	1456± 82
440 ppm	10	10.41± 0.22	15.7± 0.3	46.6± 0.8	44.8± 0.7	15.1± 0.2	33.8± 0.3	1514± 103
670 ppm	10	10.39± 0.33*	15.8± 0.4	47.0± 1.7	45.3± 0.5*	15.3± 0.2*	33.7± 0.5	1571± 140
1000 ppm	8	10.35± 0.20*	15.9± 0.4	47.3± 0.7	45.7± 0.4**	15.3± 0.2**	33.5± 0.5	1723± 110**
1500 ppm	0	-	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 4-4

HEMATOLOGY : SUMMARY, MOSUE : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ	ALBUMIN g/dℓ	A/G RATIO	T-BILIRUBIN mg/dℓ	GLUCOSE mg/dℓ	T-CHOLESTEROL mg/dℓ	TRIGLYCERIDE mg/dℓ
0 ppm	10	6.9± 0.2	3.9± 0.1	1.3± 0.1	0.25± 0.05	203± 21	67± 7	95± 44
190 ppm	10	6.9± 0.2	3.8± 0.1	1.3± 0.1	0.26± 0.06	202± 17	65± 7	111± 35
380 ppm	9	7.1± 0.3	4.0± 0.2	1.3± 0.0	0.27± 0.06	204± 18	72± 10	120± 35
750 ppm	10	7.1± 0.1	4.0± 0.1	1.3± 0.1	0.28± 0.08	187± 12	72± 11	100± 10
1500 ppm	9	7.1± 0.3	4.2± 0.3*	1.4± 0.1**	0.23± 0.03	172± 22**	99± 15**	73± 13
3000 ppm	8	7.1± 0.3	4.1± 0.1**	1.4± 0.1*	0.23± 0.03	142± 17**	108± 18**	38± 9**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	PHOSPHOLIPID mg/dℓ	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	G-GTP IU/ℓ	CPK IU/ℓ
0 ppm	10	122± 9	74± 15	26± 5	203± 114	332± 34	1± 1	92± 21
190 ppm	10	118± 10	72± 12	25± 5	171± 47	326± 38	1± 1	92± 12
380 ppm	9	131± 14	67± 5	22± 3	165± 13	335± 50	1± 1	81± 5
750 ppm	10	131± 18	67± 12	22± 3	167± 39	329± 31	1± 0	76± 11
1500 ppm	9	163± 22**	55± 6**	18± 2**	167± 27	277± 33*	1± 1	70± 7*
3000 ppm	8	166± 27**	66± 14	25± 14	189± 40	309± 46	3± 5	69± 16*

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	UREA NITROGEN mg/dℓ	CREATININE mg/dℓ	SODIUM mEq/ℓ	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
0 ppm	10	17.4± 1.4	0.6± 0.1	143± 1	3.3± 0.2	106± 1	10.4± 0.2	5.4± 0.9
190 ppm	10	17.2± 1.8	0.5± 0.0	143± 1	3.2± 0.2	106± 1	10.3± 0.2	4.9± 0.8
380 ppm	9	18.3± 1.9	0.5± 0.1	143± 2	3.1± 0.2	105± 1	10.4± 0.1	4.7± 0.8
750 ppm	10	18.5± 1.3	0.5± 0.0*	143± 1	3.5± 0.3	106± 0	10.4± 0.2	4.8± 0.9
1500 ppm	9	17.0± 1.7	0.5± 0.1*	144± 2	3.4± 0.2	108± 2	10.5± 0.2	4.7± 0.8
3000 ppm	8	16.9± 2.6	0.5± 0.0**	145± 2*	3.7± 0.3**	108± 2**	10.4± 0.1	5.8± 0.8

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 5-1

BIOCHEMISTRY : SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(2) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHER	
0 ppm	8	0.83±	0.45	2±	1	21±	10	0±	1	0±	0	4±	2	74±	10	0±	0
300 ppm	10	1.21±	0.94	2±	2	21±	8	0±	0	0±	0	4±	2	74±	9	0±	0
440 ppm	10	0.69±	0.30	1±	1	22±	12	0±	0	0±	0	3±	1	74±	12	0±	0
670 ppm	10	0.94±	0.61	1±	1	18±	7	1±	1	0±	0	4±	1	77±	6	0±	0
1000 ppm	9	1.17±	0.77	2±	1	17±	5	0±	1	0±	0	4±	1	76±	5	0±	0
1500 ppm	0	-		-		-		-		-		-		-		-	

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HEMATOLOGY(1) (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV fℓ	MCH pg	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
0 ppm	8	10.68± 0.36	16.2± 0.5	46.8± 1.3	43.8± 0.5	15.2± 0.1	34.7± 0.4	1315± 124
300 ppm	10	10.60± 0.30	16.2± 0.4	47.2± 1.2	44.6± 0.7*	15.3± 0.3	34.4± 0.5	1357± 141
440 ppm	10	10.46± 0.14	16.1± 0.3	47.3± 0.9	45.2± 0.4**	15.4± 0.2	34.1± 0.5	1349± 100
670 ppm	10	10.31± 0.43	15.9± 0.5	46.7± 1.9	45.3± 0.6**	15.5± 0.3	34.1± 0.7	1380± 229
1000 ppm	9	10.32± 0.37	15.9± 0.4	46.6± 1.6	45.2± 0.5**	15.4± 0.3	34.0± 0.6	1530± 122*
1500 ppm	0	-	-	-	-	-	-	-

Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$ Test of Dunnett

APPENDIX B 5-2

BIOCHEMISTRY : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dl	ALBUMIN g/dl	A/G RATIO	T-BILIRUBIN mg/dl	GLUCOSE mg/dl	T-CHOLESTEROL mg/dl	TRIGLYCERIDE mg/dl
0 ppm	10	6.6± 0.2	3.7± 0.1	1.3± 0.1	0.27± 0.10	129± 18	92± 6	42± 6
190 ppm	10	6.5± 0.2	3.7± 0.1	1.3± 0.1	0.24± 0.02	137± 15	87± 6	42± 4
380 ppm	10	6.5± 0.2	3.6± 0.1	1.3± 0.0	0.29± 0.18	135± 17	89± 10	42± 6
750 ppm	10	6.4± 0.2	3.6± 0.1	1.3± 0.1	0.31± 0.15	131± 24	91± 7	41± 5
1500 ppm	10	6.5± 0.2	3.7± 0.2	1.3± 0.1	0.28± 0.06	146± 21	112± 11**	45± 6
3000 ppm	10	6.5± 0.3	3.8± 0.1	1.4± 0.1**	0.49± 0.38	118± 13	117± 10**	42± 14

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	PHOSPHOLIPID mg/dℓ	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	G-GTP IU/ℓ	CPK IU/ℓ
0 ppm	10	159± 14	123± 160	62± 118	645± 1298	245± 43	2± 1	127± 65
190 ppm	10	153± 12	75± 14	23± 6	201± 38	243± 28	1± 1	95± 11
380 ppm	10	153± 15	69± 9	21± 6	209± 58	249± 35	1± 1	98± 17
750 ppm	10	158± 14	121± 153	55± 96	513± 943	250± 30	1± 1	110± 62
1500 ppm	10	185± 16**	61± 5*	20± 2	234± 82	278± 46	3± 1	84± 18
3000 ppm	10	190± 13**	70± 4	22± 2	395± 138*	320± 68**	6± 1**	102± 36

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	UREA NITROGEN mg/dℓ	CREATININE mg/dℓ	SODIUM mEq/ℓ	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
0 ppm	10	18.5± 3.5	0.6± 0.1	143± 2	3.1± 0.1	110± 2	10.0± 0.3	4.8± 1.7
190 ppm	10	18.2± 1.4	0.5± 0.0	143± 1	3.3± 0.2	110± 1	10.0± 0.3	4.7± 1.4
380 ppm	10	18.0± 1.4	0.6± 0.1	143± 2	3.1± 0.2	110± 1	10.0± 0.2	5.0± 0.9
750 ppm	10	20.0± 3.7	0.5± 0.0	143± 2	3.3± 0.2	109± 1	9.9± 0.2	5.0± 1.6
1500 ppm	10	19.2± 2.8	0.5± 0.1	144± 2	3.4± 0.3*	110± 1	9.9± 0.3	5.0± 1.1
3000 ppm	10	19.1± 3.5	0.4± 0.0**	146± 2**	3.7± 0.4**	109± 2	9.9± 0.3	6.1± 1.4

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 5-3

BIOCHEMISTRY : SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ	ALBUMIN g/dℓ	A/G RATIO	T-BILIRUBIN mg/dℓ	GLUCOSE mg/dℓ	T-CHOLESTEROL mg/dℓ	TRIGLYCERIDE mg/dℓ
0 ppm	10	5.4± 0.2	2.9± 0.1	1.1± 0.1	0.40± 0.15	191± 23	86± 7	64± 13
300 ppm	9	5.4± 0.2	2.9± 0.1	1.2± 0.1	0.32± 0.12	143± 14**	80± 9	45± 12**
440 ppm	10	5.4± 0.2	2.9± 0.1	1.2± 0.1	0.38± 0.10	147± 19**	74± 6	48± 11**
670 ppm	10	5.5± 0.3	3.1± 0.2**	1.3± 0.1**	0.37± 0.11	143± 17**	75± 11	45± 10**
1000 ppm	8	5.5± 0.2	3.1± 0.1**	1.3± 0.1**	0.38± 0.07	135± 34**	78± 14	48± 8*
1500 ppm	0	-	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	CPK IU/ℓ	UREA NITROGEN mg/dℓ	SODIUM mEq/ℓ
0 ppm	10	49± 6	14± 4	318± 121	199± 13	68± 28	24.1± 3.4	154± 2
300 ppm	9	48± 9	14± 4	244± 38	206± 16	44± 10*	28.5± 4.1	154± 1
440 ppm	10	52± 11	14± 4	300± 76	208± 10	55± 17	29.9± 2.4**	153± 2
670 ppm	10	47± 9	13± 4	279± 55	225± 12**	48± 12	28.1± 4.2	154± 2
1000 ppm	8	54± 11	17± 8	305± 64	269± 19**	61± 18	29.9± 7.1	155± 2
1500 ppm	0	-	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
0 ppm	10	4.7± 0.5	123± 1	8.9± 0.2	8.1± 0.9
300 ppm	9	4.5± 0.5	122± 2	8.7± 0.3	7.3± 0.8
440 ppm	10	4.7± 0.5	122± 3	8.7± 0.3	7.3± 0.6
670 ppm	10	4.8± 0.6	122± 3	8.6± 0.3	7.5± 1.2
1000 ppm	8	4.9± 0.3	122± 3	8.7± 0.3	8.7± 1.2
1500 ppm	0	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

APPENDIX B 5-4

BIOCHEMISTRY : SUMMARY, MOSUE : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	TOTAL PROTEIN g/dℓ	ALBUMIN g/dℓ	A/G RATIO	T-BILIRUBIN mg/dℓ	GLUCOSE mg/dℓ	T-CHOLESTEROL mg/dℓ	TRIGLYCERIDE mg/dℓ
0 ppm	8	5.3± 0.3	3.1± 0.2	1.4± 0.1	0.24± 0.06	140± 43	64± 12	48± 16
300 ppm	10	5.5± 0.2	3.2± 0.1	1.4± 0.1	0.35± 0.09	135± 15	77± 15*	44± 8
440 ppm	10	5.5± 0.2	3.2± 0.2	1.4± 0.1	0.36± 0.12	151± 25	82± 10**	46± 9
670 ppm	9	5.5± 0.2	3.2± 0.1	1.4± 0.1	0.34± 0.08	152± 29	82± 9**	45± 9
1000 ppm	9	5.4± 0.2	3.2± 0.1	1.5± 0.1*	0.35± 0.14	151± 29	82± 5**	45± 9
1500 ppm	0	-	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	CPK IU/ℓ	UREA NITROGEN mg/dℓ	SODIUM mEq/ℓ
0 ppm	8	62± 11	14± 3	278± 69	341± 29	58± 26	20.1± 3.8	152± 2
300 ppm	10	80± 49	19± 9	414± 310	333± 40	159± 233	23.2± 2.7	152± 2
440 ppm	10	72± 24	16± 3	364± 151	326± 64	101± 63	21.8± 3.7	153± 2
670 ppm	9	61± 17	15± 6	287± 109	359± 59	80± 65	22.3± 3.0	153± 2
1000 ppm	9	53± 6	14± 4	266± 55	370± 44	75± 28	21.9± 1.5	153± 2
1500 ppm	0	-	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
0 ppm	8	4.6± 0.6	121± 3	8.8± 0.3	7.0± 0.3
300 ppm	10	4.4± 0.2	120± 4	8.7± 0.4	6.8± 1.0
440 ppm	10	4.5± 0.2	123± 2	9.0± 0.5	6.9± 0.9
670 ppm	9	4.7± 0.5	124± 2	8.9± 0.4	7.0± 1.1
1000 ppm	9	4.5± 0.3	123± 2	8.7± 0.4	6.9± 1.3
1500 ppm	0	-	-	-	-

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

? : Significant test is not applied,because No. of data in this group is less than 3.

APPENDIX B 6-1

URINALYSIS : SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
SAMPLING DATE : 013-6
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Bilirubin −	+	2+	3+	CHI
0 ppm	10	0	0	0	2	0	8	0		0	1	6	3	0	0		10	0	0	0	0	0		4	6	0	0	0	0		10	0	0	0	
190 ppm	10	0	0	0	0	1	8	1		0	0	7	3	0	0		10	0	0	0	0	0		6	4	0	0	0	0		10	0	0	0	
380 ppm	10	0	0	1	0	3	6	0		0	0	6	4	0	0		10	0	0	0	0	0		5	5	0	0	0	0		10	0	0	0	
750 ppm	10	0	0	0	1	1	8	0		0	1	5	4	0	0		10	0	0	0	0	0		4	5	1	0	0	0		10	0	0	0	
1500 ppm	10	0	0	0	2	2	6	0		0	2	6	2	0	0		10	0	0	0	0	0		6	4	0	0	0	0		10	0	0	0	
3000 ppm	9	0	0	0	0	3	6	0		1	2	4	2	0	0		9	0	0	0	0	0		3	5	1	0	0	0		9	0	0	0	

Significent difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

(JCL101)

STUDY NO. : 0191
ANIMAL : RAT F344
SAMPLING DATE : 013-6
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
0 ppm	10	10	0	0	0	0		10	0	0	0	0	
190 ppm	10	10	0	0	0	0		10	0	0	0	0	
380 ppm	10	10	0	0	0	0		10	0	0	0	0	
750 ppm	10	8	2	0	0	0		10	0	0	0	0	
1500 ppm	10	8	2	0	0	0		10	0	0	0	0	
3000 ppm	9	6	1	2	0	0		9	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

APPENDIX B 6-2

URINALYSIS : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
SAMPLING DATE : 013-6
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Bilirubin −	+	2+	3+	CHI
0 ppm	10	0	0	0	1	4	5	0		1	8	1	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
190 ppm	10	0	0	0	0	1	9	0		0	6	4	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
380 ppm	10	0	0	0	1	3	6	0		0	6	4	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
750 ppm	10	0	0	0	0	2	8	0		0	9	1	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
1500 ppm	10	0	0	0	2	3	5	0		0	6	4	0	0	0		10	0	0	0	0	0		8	2	0	0	0	0		10	0	0	0	
3000 ppm	10	0	0	0	3	3	4	0		0	2	8	0	0	0	**	10	0	0	0	0	0		6	4	0	0	0	0	*	10	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

STUDY NO. : 0191
ANIMAL : RAT F344
SAMPLING DATE : 013-6
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
0 ppm	10	10	0	0	0	0		10	0	0	0	0	
190 ppm	10	10	0	0	0	0		10	0	0	0	0	
380 ppm	10	10	0	0	0	0		10	0	0	0	0	
750 ppm	10	10	0	0	0	0		10	0	0	0	0	
1500 ppm	10	10	0	0	0	0		10	0	0	0	0	
3000 ppm	10	10	0	0	0	0		10	0	0	0	0	

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

APPENDIX B 6-3

URINALYSIS : SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-6
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Occult blood −	±	+	2+	3+	CHI
0 ppm	10	0	0	2	2	2	4	0		0	0	8	2	0	0		10	0	0	0	0	0		6	3	1	0	0	0		10	0	0	0	0	
300 ppm	10	0	0	1	5	3	1	0		0	0	5	5	0	0		10	0	0	0	0	0		3	7	0	0	0	0		10	0	0	0	0	
440 ppm	10	0	0	2	2	4	2	0		0	1	5	4	0	0		10	0	0	0	0	0		4	6	0	0	0	0		10	0	0	0	0	
670 ppm	10	0	0	0	0	7	2	1		0	1	5	4	0	0		10	0	0	0	0	0		2	6	2	0	0	0		10	0	0	0	0	
1000 ppm	8	0	0	2	3	2	1	0		0	0	7	1	0	0		8	0	0	0	0	0		3	4	1	0	0	0		8	0	0	0	0	
1500 ppm	0	-	-	-	-	-	-	-	?	-	-	-	-	-	-	?	-	-	-	-	-	-	?	-	-	-	-	-	-	?	-	-	-	-	-	?

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

? : Significant test is not applied,because No. of data in this group is less than 3.

STUDY NO. : 0192 URINALYSIS
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-6
SEX : MALE REPORT TYPE : A1

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
0 ppm	10	10	0	0	0	0	
300 ppm	10	10	0	0	0	0	
440 ppm	10	10	0	0	0	0	
670 ppm	10	10	0	0	0	0	
1000 ppm	8	8	0	0	0	0	
1500 ppm	0	-	-	-	-	-	?

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

? : Significant test is not applied,because No. of data in this group is less than 3.

APPENDIX B 6-4

URINALYSIS : SUMMARY, MOSUE : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-6
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	pH 5.0	6.0	6.5	7.0	7.5	8.0	8.5	CHI	Protein −	±	+	2+	3+	4+	CHI	Glucose −	±	+	2+	3+	4+	CHI	Ketone body −	±	+	2+	3+	4+	CHI	Occult blood −	±	+	2+	3+	CHI
0 ppm	10	0	0	3	2	5	0	0		0	1	9	0	0	0		10	0	0	0	0	0		2	8	0	0	0	0		10	0	0	0	0	
300 ppm	10	0	0	1	2	4	3	0		0	1	9	0	0	0		10	0	0	0	0	0		4	6	0	0	0	0		10	0	0	0	0	
440 ppm	10	0	0	1	3	6	0	0		0	1	7	2	0	0		10	0	0	0	0	0		2	7	1	0	0	0		10	0	0	0	0	
670 ppm	10	0	1	1	5	1	2	0		0	4	5	1	0	0		10	0	0	0	0	0		2	8	0	0	0	0		10	0	0	0	0	
1000 ppm	9	0	0	2	1	4	2	0		0	2	6	1	0	0		9	0	0	0	0	0		5	4	0	0	0	0		9	0	0	0	0	
1500 ppm	0	-	-	-	-	-	-	-	?	-	-	-	-	-	-	?	-	-	-	-	-	-	?	-	-	-	-	-	-	?	-	-	-	-	-	?

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

? : Significant test is not applied,because No. of data in this group is less than 3.

STUDY NO. : 0192 URINALYSIS
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-6
SEX : FEMALE REPORT TYPE : A1

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
0 ppm	10	10	0	0	0	0	
300 ppm	10	10	0	0	0	0	
440 ppm	10	10	0	0	0	0	
670 ppm	10	10	0	0	0	0	
1000 ppm	9	9	0	0	0	0	
1500 ppm	0	-	-	-	-	-	?

Significent difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of CHI SQUARE

? : Significant test is not applied,because No. of data in this group is less than 3.

APPENDIX B 7-1

GROSS FINDINGS : SUMMARY, RAT: MALE : DEAD AND MORIBUND ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name NO. of Animals	0 ppm 0 (%)	190 ppm 0 (%)	380 ppm 0 (%)	750 ppm 0 (%)
thymus	atrophic		- (-)	- (-)	- (-)	- (-)
	red		- (-)	- (-)	- (-)	- (-)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name NO. of Animals	1500 ppm 0 (%)	3000 ppm 1 (%)
thymus	atrophic		- (-)	1 (100)
	red		- (-)	1 (100)

APPENDIX B 7-2

GROSS FINDINGS : SUMMARY, RAT : MALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name / NO. of Animals	0 ppm 10 (%)	190 ppm 10 (%)	380 ppm 10 (%)	750 ppm 10 (%)
lung	red		0 (0)	0 (0)	0 (0)	0 (0)
liver	herniation		1 (10)	0 (0)	0 (0)	0 (0)
eye	turbid		0 (0)	0 (0)	1 (10)	0 (0)
	exophthalmos		0 (0)	0 (0)	1 (10)	0 (0)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	1500 ppm 10 (%)	3000 ppm 9 (%)
lung	red		0 (0)	1 (11)
liver	herniation		0 (0)	0 (0)
eye	turbid		0 (0)	0 (0)
	exophthalmos		0 (0)	0 (0)

APPENDIX B 7-3

GROSS FINDINGS : SUMMARY, RAT : FEMALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	0 ppm	190 ppm	380 ppm	750 ppm
		NO. of Animals	10 (%)	10 (%)	10 (%)	10 (%)
liver	herniation		1 (10)	1 (10)	0 (0)	1 (10)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	1500 ppm	3000 ppm
		NO. of Animals	10 (%)	10 (%)
liver	herniation		1 (10)	0 (0)

APPENDIX B 7-4

GROSS FINDINGS : SUMMARY, MOSUE : MALE :DEAD AND MORIBUND ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name / NO. of Animals	0 ppm 0 (%)	300 ppm 0 (%)	440 ppm 0 (%)	670 ppm 0 (%)
lung	red zone		- (-)	- (-)	- (-)	- (-)
spleen	black zone		- (-)	- (-)	- (-)	- (-)
liver	white zone		- (-)	- (-)	- (-)	- (-)
kidney	hydronephrosis		- (-)	- (-)	- (-)	- (-)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name / NO. of Animals	1000 ppm 2 (%)	1500 ppm 10 (%)
lung	red zone		0 (0)	1 (10)
spleen	black zone		1 (50)	0 (0)
liver	white zone		0 (0)	4 (40)
kidney	hydronephrosis		0 (0)	1 (10)

APPENDIX B 7-5

GROSS FINDINGS : SUMMARY, MOSUE : MALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	0 ppm	300 ppm	440 ppm	670 ppm
		NO. of Animals	10 (%)	10 (%)	10 (%)	10 (%)
spleen	black zone		0 (0)	1 (10)	3 (30)	0 (0)
kidney	hydronephrosis		0 (0)	1 (10)	0 (0)	0 (0)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	1000 ppm 8 (%)	1500 ppm 0 (%)
spleen	black zone		0 (0)	- (-)
kidney	hydronephrosis		1 (13)	- (-)

APPENDIX B 7-6

GROSS FINDINGS : SUMMARY, MOSUE : FEMALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name / NO. of Animals	0 ppm 10 (%)	300 ppm 10 (%)	440 ppm 10 (%)	670 ppm 10 (%)
spleen	black zone		0 (0)	0 (0)	3 (30)	0 (0)
ovary	cyst		0 (0)	1 (10)	0 (0)	0 (0)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	1000 ppm 9 (%)	1500 ppm 0 (%)
spleen	black zone		1 (11)	- (-)
ovary	cyst		1 (11)	- (-)

APPENDIX B 8-1

ORGAN WEIGHT, ABSOLUTE : SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	TESTES	HEART	LUNGS
0 ppm	10	316± 19	0.256± 0.036	0.046± 0.004	3.102± 0.288	0.943± 0.077	0.986± 0.061
190 ppm	10	310± 18	0.274± 0.047	0.054± 0.004**	2.939± 0.100	0.940± 0.068	0.980± 0.044
380 ppm	10	292± 20*	0.268± 0.028	0.047± 0.005	2.907± 0.127	0.897± 0.073	0.935± 0.051
750 ppm	10	250± 15**	0.208± 0.037**	0.046± 0.005	2.831± 0.054*	0.831± 0.047**	0.885± 0.045*
1500 ppm	10	200± 18**	0.166± 0.020**	0.039± 0.004**	1.478± 0.295**	0.733± 0.058**	0.901± 0.291**
3000 ppm	9	140± 15**	0.103± 0.025**	0.041± 0.002	1.151± 0.104**	0.609± 0.055**	0.840± 0.321**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	10	1.817± 0.102	0.511± 0.040	7.966± 0.497	1.873± 0.046
190 ppm	10	1.774± 0.081	0.524± 0.043	7.658± 0.595	1.845± 0.043
380 ppm	10	1.744± 0.134	0.485± 0.035	7.643± 0.603	1.860± 0.037
750 ppm	10	1.633± 0.103*	0.449± 0.041*	6.718± 0.573**	1.804± 0.038**
1500 ppm	10	1.467± 0.128**	0.394± 0.061**	5.728± 0.637**	1.706± 0.054**
3000 ppm	9	1.379± 0.205**	0.337± 0.064**	4.795± 1.199**	1.525± 0.037**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 8-2

ORGAN WEIGHT, ABSOLUTE : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
0 ppm	10	178± 9	0.198± 0.028	0.053± 0.003	0.110± 0.014	0.609± 0.034	0.749± 0.055
190 ppm	10	178± 12	0.198± 0.019	0.053± 0.004	0.107± 0.011	0.631± 0.050	0.749± 0.044
380 ppm	10	170± 9	0.202± 0.033	0.053± 0.006	0.102± 0.021	0.618± 0.062	0.722± 0.027
750 ppm	10	154± 9**	0.175± 0.026	0.048± 0.005	0.093± 0.009	0.632± 0.113	0.741± 0.071
1500 ppm	10	130± 9**	0.146± 0.020**	0.044± 0.005**	0.057± 0.015**	0.548± 0.041	0.641± 0.036**
3000 ppm	10	97± 6**	0.096± 0.025**	0.042± 0.005**	0.042± 0.004**	0.475± 0.049**	0.593± 0.031**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	10	1.147± 0.045	0.357± 0.054	4.069± 0.226	1.725± 0.058
190 ppm	10	1.177± 0.096	0.355± 0.023	4.116± 0.272	1.725± 0.040
380 ppm	10	1.133± 0.042	0.345± 0.026	3.963± 0.274	1.714± 0.023
750 ppm	10	1.138± 0.072	0.341± 0.038	3.802± 0.226	1.687± 0.035
1500 ppm	10	1.042± 0.058**	0.280± 0.025**	3.517± 0.266**	1.607± 0.033**
3000 ppm	10	1.066± 0.043*	0.256± 0.030**	3.043± 0.204**	1.463± 0.032**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 8-3

ORGAN WEIGHT, ABSOLUTE : SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	TESTES	HEART	LUNGS
0 ppm	10	33.0± 1.7	0.039± 0.009	0.009± 0.002	0.206± 0.021	0.147± 0.012	0.152± 0.008
300 ppm	10	27.9± 1.7**	0.030± 0.006	0.008± 0.002	0.191± 0.025	0.141± 0.011	0.151± 0.012
440 ppm	10	26.3± 1.7**	0.032± 0.007	0.008± 0.003	0.194± 0.020	0.146± 0.017	0.152± 0.010
670 ppm	10	25.0± 0.8**	0.035± 0.006	0.008± 0.002	0.191± 0.030	0.138± 0.011	0.152± 0.006
1000 ppm	8	25.1± 1.1**	0.036± 0.007	0.009± 0.002	0.171± 0.024	0.135± 0.009	0.154± 0.007
1500 ppm	0	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

(HCL040)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	10	0.455± 0.032	0.046± 0.006	1.189± 0.077	0.453± 0.014
300 ppm	10	0.602± 0.538	0.047± 0.010	1.103± 0.089	0.454± 0.016
440 ppm	10	0.428± 0.030	0.047± 0.006	1.105± 0.086	0.444± 0.011
670 ppm	10	0.418± 0.033	0.043± 0.005	1.071± 0.060**	0.444± 0.010
1000 ppm	8	0.420± 0.040	0.043± 0.006	1.067± 0.068**	0.430± 0.010**
1500 ppm	0	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 8-4

ORGAN WEIGHT, ABSOLUTE : SUMMARY, MOSUE : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
0 ppm	8	23.3± 1.9	0.037± 0.009	0.011± 0.004	0.024± 0.009	0.128± 0.005	0.147± 0.010
300 ppm	10	21.6± 1.3*	0.040± 0.007	0.010± 0.004	0.024± 0.009	0.119± 0.011*	0.149± 0.015
440 ppm	10	21.4± 1.2*	0.040± 0.010	0.011± 0.003	0.023± 0.005	0.118± 0.008*	0.146± 0.012
670 ppm	10	20.8± 1.1**	0.042± 0.006	0.009± 0.003	0.021± 0.005	0.116± 0.006**	0.146± 0.015
1000 ppm	9	20.5± 0.9**	0.046± 0.007	0.009± 0.002	0.022± 0.006	0.115± 0.009**	0.143± 0.011
1500 ppm	0	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	8	0.316± 0.017	0.053± 0.006	0.956± 0.109	0.470± 0.012
300 ppm	10	0.298± 0.015	0.054± 0.009	0.948± 0.060	0.460± 0.019
440 ppm	10	0.297± 0.020	0.049± 0.008	0.958± 0.076	0.451± 0.008*
670 ppm	10	0.290± 0.013**	0.047± 0.009	0.942± 0.075	0.435± 0.012**
1000 ppm	9	0.301± 0.020	0.043± 0.004*	0.952± 0.053	0.415± 0.014**
1500 ppm	0	-	-	-	-

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 9-1

ORGAN WEIGHT, RELATIVE : SUMMARY, RAT : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	TESTES	HEART	LUNGS
0 ppm	10	316± 19	0.081± 0.009	0.015± 0.002	0.982± 0.087	0.298± 0.014	0.312± 0.014
190 ppm	10	310± 18	0.088± 0.010	0.017± 0.002*	0.951± 0.060	0.304± 0.018	0.317± 0.015
380 ppm	10	292± 20*	0.092± 0.007	0.016± 0.002	0.999± 0.059	0.308± 0.016	0.321± 0.016
750 ppm	10	250± 15**	0.083± 0.012	0.019± 0.002**	1.136± 0.071**	0.333± 0.016**	0.354± 0.014*
1500 ppm	10	200± 18**	0.083± 0.007	0.020± 0.002**	0.738± 0.117**	0.368± 0.022**	0.451± 0.134**
3000 ppm	9	140± 15**	0.073± 0.014	0.030± 0.004**	0.825± 0.076**	0.435± 0.014**	0.599± 0.211**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	10	0.575± 0.016	0.161± 0.009	2.521± 0.089	0.594± 0.031
190 ppm	10	0.573± 0.017	0.170± 0.015	2.471± 0.102	0.597± 0.029
380 ppm	10	0.598± 0.031	0.166± 0.007	2.621± 0.144	0.640± 0.046
750 ppm	10	0.653± 0.022*	0.179± 0.009*	2.686± 0.136	0.723± 0.036*
1500 ppm	10	0.736± 0.057**	0.197± 0.019**	2.865± 0.157**	0.859± 0.073**
3000 ppm	9	0.984± 0.104**	0.239± 0.029**	3.409± 0.702**	1.099± 0.114**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 9-2

ORGAN WEIGHT, RELATIVE : SUMMARY, RAT : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
0 ppm	10	178± 9	0.111± 0.012	0.030± 0.003	0.062± 0.007	0.342± 0.016	0.421± 0.036
190 ppm	10	178± 12	0.112± 0.010	0.030± 0.002	0.060± 0.003	0.355± 0.031	0.421± 0.019
380 ppm	10	170± 9	0.118± 0.015	0.031± 0.003	0.060± 0.010	0.365± 0.033	0.426± 0.018
750 ppm	10	154± 9**	0.113± 0.013	0.031± 0.004	0.061± 0.006	0.411± 0.068**	0.483± 0.055*
1500 ppm	10	130± 9**	0.112± 0.013	0.034± 0.003*	0.044± 0.010**	0.423± 0.040**	0.493± 0.022**
3000 ppm	10	97± 6**	0.099± 0.026	0.043± 0.004**	0.043± 0.005**	0.490± 0.029**	0.613± 0.036**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

(HCL042)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	10	0.644± 0.031	0.200± 0.022	2.284± 0.093	0.970± 0.063
190 ppm	10	0.661± 0.024	0.199± 0.007	2.312± 0.059	0.972± 0.059
380 ppm	10	0.669± 0.030	0.203± 0.013	2.334± 0.064	1.013± 0.052
750 ppm	10	0.740± 0.028**	0.221± 0.018*	2.472± 0.074**	1.099± 0.053**
1500 ppm	10	0.802± 0.043**	0.215± 0.016	2.701± 0.082**	1.238± 0.071**
3000 ppm	10	1.103± 0.064**	0.264± 0.020**	3.141± 0.110**	1.515± 0.090**

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 9-3

ORGAN WEIGHT, RELATIVE : SUMMARY, MOSUE : MALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	TESTES	HEART	LUNGS
0 ppm	10	33.0± 1.7	0.117± 0.023	0.028± 0.007	0.623± 0.052	0.445± 0.033	0.463± 0.020
300 ppm	10	27.9± 1.7**	0.109± 0.021	0.030± 0.007	0.685± 0.073	0.505± 0.038**	0.540± 0.033**
440 ppm	10	26.3± 1.7**	0.120± 0.022	0.031± 0.011	0.743± 0.099*	0.556± 0.049**	0.579± 0.037**
670 ppm	10	25.0± 0.8**	0.138± 0.020	0.033± 0.008	0.764± 0.112**	0.552± 0.041**	0.610± 0.035**
1000 ppm	8	25.1± 1.1**	0.144± 0.030	0.036± 0.005	0.683± 0.094	0.538± 0.042**	0.613± 0.037**
1500 ppm	0	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	10	1.382± 0.085	0.139± 0.014	3.607± 0.192	1.375± 0.059
300 ppm	10	2.170± 1.973*	0.167± 0.033*	3.949± 0.203**	1.631± 0.082
440 ppm	10	1.629± 0.091**	0.179± 0.017**	4.197± 0.103**	1.694± 0.108**
670 ppm	10	1.674± 0.116**	0.172± 0.019**	4.289± 0.179**	1.781± 0.037**
1000 ppm	8	1.676± 0.181**	0.170± 0.021*	4.251± 0.187**	1.717± 0.072**
1500 ppm	0	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 9-4

ORGAN WEIGHT, RELATIVE : SUMMARY, MOSUE : FEMALE

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	Body Weight (g)	THYMUS	ADRENALS	OVARIES	HEART	LUNGS
0 ppm	8	23.3± 1.9	0.159± 0.035	0.049± 0.018	0.101± 0.035	0.558± 0.040	0.634± 0.057
300 ppm	10	21.6± 1.3*	0.185± 0.030	0.048± 0.018	0.113± 0.038	0.551± 0.043	0.689± 0.067
440 ppm	10	21.4± 1.2*	0.187± 0.046	0.050± 0.012	0.106± 0.024	0.558± 0.049	0.683± 0.048
670 ppm	10	20.8± 1.1**	0.200± 0.026*	0.045± 0.016	0.103± 0.024	0.557± 0.032	0.702± 0.075
1000 ppm	9	20.5± 0.9**	0.226± 0.031**	0.045± 0.009	0.108± 0.027	0.560± 0.042	0.700± 0.044
1500 ppm	0	-	-	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	KIDNEYS	SPLEEN	LIVER	BRAIN
0 ppm	8	1.362± 0.097	0.225± 0.016	4.101± 0.181	2.028± 0.162
300 ppm	10	1.382± 0.079	0.249± 0.035	4.387± 0.144*	2.134± 0.125
440 ppm	10	1.389± 0.080	0.227± 0.029	4.470± 0.178**	2.113± 0.106
670 ppm	10	1.396± 0.051	0.223± 0.033	4.532± 0.287**	2.097± 0.089
1000 ppm	9	1.468± 0.060*	0.208± 0.016	4.653± 0.244**	2.027± 0.070
1500 ppm	0	-	-	-	-

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Dunnett

APPENDIX B 10-1

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT: MALE : DEAD AND MORIBUND ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	0 ppm				190 ppm				380 ppm				750 pp			
		No. of Animals	0				0				0				0			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
spleen	deposit of hemosiderin		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Digestive system]																		
liver	necrosis:focal		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Reproductive system]																		
testis	atrophy		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
epididymis	decrreased:sperma		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Nervous system]																		
brain	degeneration:granular cell		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	1500 ppm				3000 ppm			
		No. of Animals	0				1			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]										
spleen	deposit of hemosiderin		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)
[Digestive system]										
liver	necrosis:focal		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)
[Reproductive system]										
testis	atrophy		- (-)	- (-)	- (-)	- (-)	0 (0)	0 (0)	0 (0)	1 (100)
epididymis	decrreased:sperma		- (-)	- (-)	- (-)	- (-)	0 (0)	0 (0)	1 (100)	0 (0)
[Nervous system]										
brain	degeneration:granular cell		- (-)	- (-)	- (-)	- (-)	1 (100)	0 (0)	0 (0)	0 (0)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 10-2

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	0 ppm				190 ppm				380 ppm				750 pp			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
lung	congestion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
spleen	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
liver	herniation		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	eosinophilic body		2 (20)	4 (40)	4 (40)	0 (0)	2 (20)	5 (50)	3 (30)	0 (0)	0 (0)	5 (50)	5 (50)	0 (0)	3 (30)	5 (50)	2 (20)	0 (0)
[Endocrine system]																		
pituitary	cyst		1 (10)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	fatty change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
testis	atrophy		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	1500 ppm				3000 ppm			
		No. of Animals	10				9			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]										
lung	congestion		0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]										
spleen	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
[Digestive system]										
liver	herniation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]										
kidney	eosinophilic body		6 (60)	2 (20)	0 (0)	0 * (0)	0 (0)	0 (0)	0 (0)	0 ** (0)
[Endocrine system]										
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	fatty change		6 (60)	0 (0)	0 (0)	0 * (0)	8 (89)	1 (11)	0 (0)	0 ** (0)
[Reproductive system]										
testis	atrophy		0 (0)	5 (50)	3 (30)	1 ** (10)	0 (0)	4 (44)	5 (56)	0 ** (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	0 ppm				190 ppm				380 ppm				750 pp			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Reproductive system]																		
testis	edema		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
epididymis	decrreased:sperma		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain	degeneration:granular cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	1500 ppm				3000 ppm			
		No. of Animals	10				9			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Reproductive system]										
testis	edema		8 (80)	0 (0)	1 (10)	0 (0) **	4 (44)	0 (0)	0 (0)	0 (0)
epididymis	decrreased:sperma		0 (0)	0 (0)	8 (80)	0 (0) **	0 (0)	0 (0)	9 (100)	0 (0) **
[Nervous system]										
brain	degeneration:granular cell		0 (0)	0 (0)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 10-3

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0191
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	0 ppm				190 ppm				380 ppm				750 pp			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
bone marrow	granulation		2 (20)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	3 (30)	0 (0)	0 (0)
spleen	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
liver	herniation		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	mineralization:cortico-medullary junction		8 (80)	0 (0)	0 (0)	0 (0)	8 (80)	0 (0)	0 (0)	0 (0)	6 (60)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	fatty change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
Harder gl	lymphocytic infiltration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	1500 ppm				3000 ppm			
		No. of Animals	10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]										
bone marrow	granulation		1 (10)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spleen	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
[Digestive system]										
liver	herniation		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]										
kidney	mineralization:cortico-medullary junction		0 (0)	0 (0)	0 (0)	0 ** (0)	3 (30)	0 (0)	0 (0)	0 (0)
[Endocrine system]										
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
adrenal	fatty change		9 (90)	0 (0)	0 (0)	0 ** (0)	10 (100)	0 (0)	0 (0)	0 ** (0)
[Special sense organs/appandage]										
Harder gl	lymphocytic infiltration		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 10-4

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : DEAD AND MORIBUND ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0- 14W)

Organ	Findings	Group Name	0 ppm				300 ppm				440 ppm				670 ppm			
		No. of Animals	0				0				0				0			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
lung	congestion		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Hematopoietic system]																		
spleen	deposit of melanin		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Digestive system]																		
liver	necrosis:central		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
	deposit of calcium		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
	vacuolic change:central		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Urinary system]																		
kidney	hydronephrosis		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
	tubular necrosis		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)
[Reproductive system]																		
epididymis	spermatogenic granuloma		- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)	- (-)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	1000 ppm				1500 ppm			
		No. of Animals	2				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]										
lung	congestion		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]										
spleen	deposit of melanin		1 (50)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]										
liver	necrosis:central		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	1 (10)	3 (30)	1 (10)
	deposit of calcium		0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
	vacuolic change:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)
[Urinary system]										
kidney	hydronephrosis		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	tubular necrosis		0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	1 (10)	0 (0)
[Reproductive system]										
epididymis	spermatogenic granuloma		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

<1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 10-5

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY)

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	0 ppm				300 ppm				440 ppm				670 ppm			
		No. of Animals	10				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
spleen	deposit of melanin		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
liver	vacuolic change:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	hydronephrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	cyst		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Rathke pouch		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
epididymis	spermatogenic granuloma		1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	1000 ppm				1500 ppm			
		No. of Animals	8				0			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]										
spleen	deposit of melanin		0 (0)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)
[Digestive system]										
liver	vacuolic change:central		2 (25)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)
[Urinary system]										
kidney	hydronephrosis		0 (0)	1 (13)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)
[Endocrine system]										
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)
[Reproductive system]										
epididymis	spermatogenic granuloma		0 (0)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)

Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 10-6

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : FEMALE : SACRIFICED ANIMALS

(THIRTEEN-WEEK STUDY))

STUDY NO. : 0192
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	0 ppm				300 ppm				440 ppm				670 ppm			
		No. of Animals	8				10				10				10			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
lung	bronchiolar-alveolar cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
spleen	deposit of melanin		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

Organ	Findings	Group Name	1000 ppm				1500 ppm			
		No. of Animals	9				0			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]										
lung	bronchiolar-alveolar cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)
[Hematopoietic system]										
spleen	deposit of melanin		1 (11)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)
[Endocrine system]										
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	- (-)	- (-)	- (-)	- (-)

Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square <1>:Slight <2>:Moderate <3>:Marked <4>:Severe

APPENDIX B 11-1

IDENTITY AND PURITY OF METHYL CHLORIDE

PERFORMED AT THE JAPAN BIOASSAY LABORATORY

(THIRTEEN-WEEK STUDY)

IDENTITY AND PURITY OF METHYL CHLORIDE PERFORMED AT THE JAPANBIOASSAY LABORATORY (THIRTEEN-WEEK STUDIES)

Lot no.83610

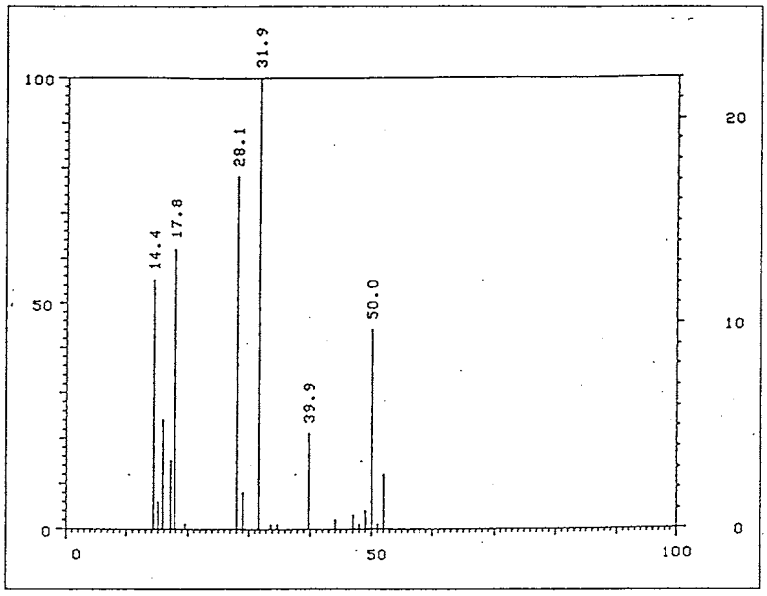
1. Spectral data

(1) Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of METHYL CHLORIDE

Result:

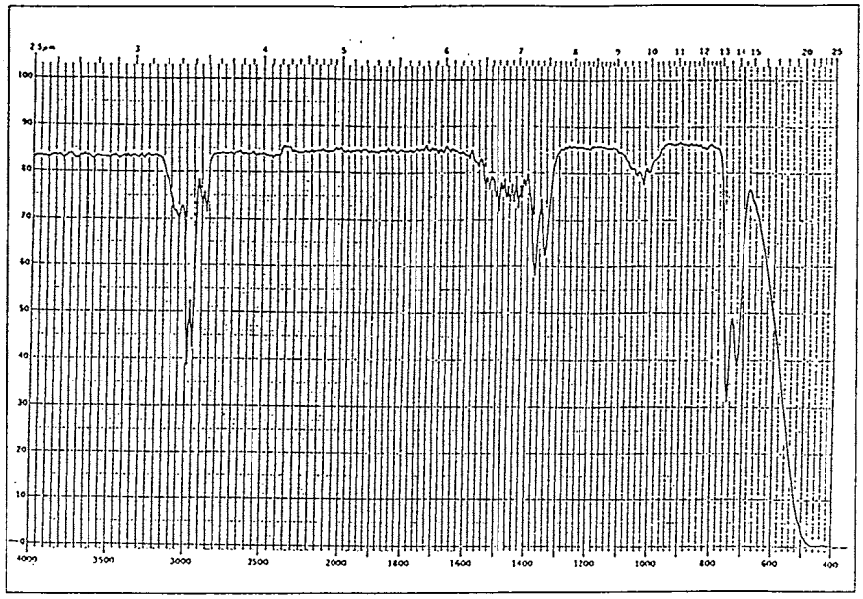
	Molecule Weight
Theoretical Value	49.99(Calculated)
Determined	50.0

(2) Infrared Spectrometry

Instrument : Hitachi 270-30

Cell : KBr(Liquid Cell)

Slit : Medium



Infrared Spectrum of METHYL CHLORIDE

Results	Determines : Wave Number (CM^{-1})	Literature Values
	700～ 780	680～ 780
	960～1100	960～1080
	1300～1400	1300～1400
	1420～1580	1420～1580
	2900～3100	2900～3100
		(Sadtler Handbook by Sadtler Research Laboratories, Inc.)

2. Gas Chromatography

Instrument:	Hewlett Packard 5890A
Column:	Methyl Silicone(0.2mmϕ × 50m)
Column Temperature:	80°C
Flow Rate:	1 ml/min
Detector:	FID(Hydrogen Flame Ionization)
Injection Volume:	1 μl

Results: Only major peak

Peak No.	Retention Time(min)	Retention Time Relative to Major Peak	AREA (percent of major peak)
1	2.103	1.00	100

3. Conclusions: The result of the mass spectrum agreed with the theoretical value and the infrared spectrum agreed with the literature values. Gas chromtography indicated only the major peak.

APPENDIX B 11-2

STABILITY OF METHYL CHLORIDE AT THE JAPAN BIOASSAY LABORATORY

(THIRTEEN-WEEK STUDY)

STABILITY OF METHYL CHLORIDE AT THE JAPAN BIOASSAY LABORATORY(THIRTEEN-WEEK STUDIES)

Lot no.83610

1.Sample storage: Methyl Chloride was stored for about 13 weeks at 5°C.

2.Infrared Spectrometry

Instrument : Hitachi 270-30

Cell : KBr(Liquid Cell)

Slit : Medium

Results

: Wave Number (CM^{-1})	01/23/92	05/14/92
	700～ 780	700～ 780
	960～1100	960～1100
	1300～1400	1300～1400
	1420～1580	1420～1580
	2900～3100	2900～3100

2.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ × 50m)

Column Temperature: 80°C

Flow Rate: 1 ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1 μl

Results: Only major peak

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
01/23/92	2.103	1.00	100
05/14/92	2.102	1.00	100

3. Conclusions: The results of the infrared spectrum agreed with the previous determine of test values.Gas chromatography indicates only the major peak. Consequently,Methyl Chloride was stable as the chemical when stored for about 13 weeks at 5°C.

APPENDIX B 12-1

CONCENTRATION OF METHYL CHLORIDE IN INHALATION CHAMBER

(THIRTEEN-WEEK STUDY)

CONCENTRATION OF METHYL CHLORIDE IN INHALATION CHAMBER
(RAT : THIRTEEN-WEEK STUDY)

Group Name	Concentration(ppm) Mean	±	S.D.
Control	0.0	±	0.0
190ppm	189.7	±	1.1
380ppm	380.2	±	1.9
750ppm	748.6	±	4.6
1500ppm	1495.8	±	5.4
3000ppm	3001.3	±	14.2

CONCENTRATION OF METHYL CHLORIDE IN INHALATION CHAMBER
(MOUSE : THIRTEEN-WEEK STUDY)

Group Name	Concentration(ppm) Mean	±	S.D.
Control	0.0	±	0.0
300ppm	299.3	±	1.5
440ppm	440.6	±	1.8
670ppm	669.7	±	2.8
1000ppm	999.1	±	5.7
1500ppm	1499.8	±	6.7

APPENDIX B 12-2

ENVIRONMENT OF INHALATION CHAMBER

(THIRTEEN-WEEK STUDY)

ENVIRONMENT OF INHALATION CHAMBER

(RAT : THIRTEEN-WEEK STUDY)

Group Name	TEMPERATURE(℃) MEAN ± S.D.	HUMIDITY(%) MEAN ± S.D.	VENTILATION RATE(ℓ/min) MEAN ± S.D.	ROOM AIR CHANGE(time/h) MEAN
Control	22.8 ± 0.3	60.6 ± 1.8	212.6 ± 0.6	12.0
190pm	22.9 ± 0.2	58.2 ± 0.9	212.5 ± 1.1	12.0
380pm	22.7 ± 0.2	60.2 ± 1.3	212.4 ± 0.5	12.0
750pm	22.7 ± 0.1	56.5 ± 0.9	212.0 ± 0.6	12.0
1500pm	22.8 ± 0.1	56.4 ± 1.2	212.4 ± 0.5	12.0
3000pm	22.5 ± 0.1	56.4 ± 1.0	212.4 ± 0.6	12.0

ENVIRONMENT OF INHALATION CHAMBER

(MOUSE : THIRTEEN-WEEK STUDY)

Group Name	TEMPERATURE(℃) MEAN ± S.D.	HUMIDITY(%) MEAN ± S.D.	VENTILATION RATE(ℓ/min) MEAN ± S.D.	ROOM AIR CHANGE(time/h) MEAN
Control	21.9 ± 0.1	59.5 ± 2.3	103.5 ± 0.3	12.0
300ppm	22.0 ± 0.1	59.8 ± 1.6	104.4 ± 0.4	12.0
440ppm	21.9 ± 0.1	53.7 ± 1.5	104.3 ± 0.3	12.0
670ppm	22.6 ± 0.1	54.7 ± 1.0	104.2 ± 0.4	12.0
1000ppm	22.3 ± 0.1	54.1 ± 0.9	104.1 ± 0.4	12.0
1500ppm	21.6 ± 0.2	54.3 ± 0.7	104.1 ± 0.3	12.0

APPENDIX C 2

UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

Item	Method	Unit
Hematology		
Red blood cell (RBC)	Light scattering method [1]	$\times 10^6/\mu l$
Hemoglobin (Hgb)	Cyanmethemoglobin method [1]	g/dl
Hematocrit (Hct)	Calculated as RBC×MCV/10 [1]	%
Mean corpuscular volume (MCV)	Light scattering method [1]	fl
Mean corpuscular hemoglobin (MCH)	Calculated as Hgb/RBC×10 [1]	pg
Mean corpuscular hemoglobin concentration (MCHC)	Calculated as Hgb/Hct×100 [1]	g/dl
Platelet	Light scattering method [1]	$\times 10^3/\mu l$
White blood cell (WBC)	Light scattering method [1]	$\times 10^3/\mu l$
Differential WBC	Pattern recognition method [2] (May-Grunwald-Giemsa staining)	%
Biochemistry		
Total protein (TP)	Biuret method [3]	g/dl
Albumin (Alb)	BCG method [3]	g/dl
A/G ratio	Calculated as Alb/ (TP−Alb) [3]	
T-bilirubin	Michaelson method [3]	mg/dl
Glucose	Enzymatic method (HK·G-6-PDH) [3]	mg/dl
T-cholesterol	Enzymatic method (CEH·COD·POD) [3]	mg/dl
Triglyceride	Enzymatic method (GK·GPO·POD) [3]	mg/dl
Phospholipid	Enzymatic method (PLD·COD·POD) [3]	mg/dl
Glutamic oxaloacetic transaminase (GOT)	Karmen method [3]	IU/l
Glutamic pyruvic transaminase (GPT)	Karmen method [3]	IU/l
Lactate dehydrogenase (LDH)	Wroblewski-LaDue method [3]	IU/l
Alkaline phosphatase (ALP)	GSCC method [3]	IU/l
γ-Glutamyl transpeptidase (G-GTP)	L-γ-Glutamyl-p-nitroanilide substrate method [3]	IU/l
Creatine phosphokinase (CPK)	GSCC method [3]	IU/l
Urea nitrogen	Enzymatic method (Urease·GLDH) [3]	mg/dl
Creatinine	Jaffe method [3]	mg/dl
Sodium	Flame photometry [4]	mEq/l
Potassium	Flame photometry [4]	mEq/l
Chloride	Coulometric titration [4]	mEq/l
Calcium	OCPC method [3]	mg/dl
Inorganic phosphorus	Enzymatic method (SPL·PGM·G-6-PDH) [3]	mg/dl
Urinalysis		
pH, Protein, Glucose, Ketone body, Bilirubin, Occult blood, Urobilinogen	Urinalysis reagent paper method [5]	

1) Automatic blood cell analyzer (Technicon H·1 : Technicon Instruments Corporation,USA)
2) Automatic blood cell differential analyzer (Hitachi 8200 : Hitachi,Ltd.,Japan)
3) Automatic analyzer (Hitachi 705 : Hitachi,Ltd.,Japan)
4) Flame photometer (Hitachi 750 : Hitachi,Ltd.,Japan)
5) Ames reagent strips for urinalysis (Multistix, Uro-Labstix : Miles Sankyo Co.,Ltd.,Japan)

APPENDIX C 1

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALSYS

UNITS AND DECIMNAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

	TEST ITEM	DECIMAL PLACE	UNIT
HEMATOLOGY	Red blood cell	2	$\times 10^6/\mu l$
	Hemoglobin	1	g/dl
	Hematocrit	1	%
	MCV	1	fl
	Platelet	0	$\times 10^3/\mu l$
	White blood cell	2	$\times 10^3/\mu l$
	Differntial WBC	0	%
BIOCHEMISTRY	Total protein	1	g/dl
	Albumin	1	g/dl
	A/G ratio	1	
	T-bilirubin	2	mg/dl
	Glucose	0	mg/dl
	T-cholesterol	0	mg/dl
	Triglyceride	0	mg/dl
	Phospholipid	0	mg/dl
	GOT	0	IU/l
	GPT	0	IU/l
	γ -GTP	0	IU/l
	LDH	0	IU/l
	ALP	0	IU/l
	CPK	0	IU/l
	Urea nitrogen	1	mg/dl
	Creatinine	1	mg/dl
	Sodium	0	mEq/l
	Potassium	1	mEq/l
	Chloride	0	mEq/l
	Calcium	1	mg/dl
	Inorganic phosphorus	1	mg/dl