クロトンアルデヒド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

試験番号

13 週間試験：ラット/0292；マウス 0293

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CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 1-1	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
ABNORMAL RESPIRA.SOUND	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.5 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24 ppm	0	0	1	3	6	8	2	2	0	0	0	1	1	0

APPENDIX B 1-2

CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day 1-1	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
EYE OPACITY	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.5 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	12 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CORNEAL OPACITY	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.5 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6 ppm	0	0	0	0	0	0	0	0	0	0	0	0	1	1
	12 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ABNORMAL RESPIRA.SOUND	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.5 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24 ppm	0	0	0	1	0	0	0	0	0	0	0	0	0	0

APPENDIX B 1-3

CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : MALE

Clinical sign	Group Name	Administration Week-day 1-1	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
ABNORMAL RESPIRA.SOUND	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.5 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	2

APPENDIX B 1-4

CLINICAL OBSERVATION (THIRTEEN-WEEK STUDY: SUMMARY)

MOSUE: FEMALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1 13

CLINICAL OBSERVATION (SUMMARY)
ALL ANIMALS

SEX : FEMALE

Clinical sign	Group Name	Administration Week-day 1-1	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
ABNORMAL RESPIRA.SOUND	Control	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1.5 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	3 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	24 ppm	0	0	0	0	0	0	0	0	0	0	0	0	0	1

APPENDIX B 2-1

BODY WEIGHT CHANGES (THIRTEEN-WEEK STUDY:SUMMARY)

RAT : MALE

STUDY NO. : 0292
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-7	2-7	3-7	4-7	5-7
Control	119± 5	123± 4	150± 5	182± 8	209± 9	230± 11	246± 12
1.5 ppm	119± 4	122± 4	149± 6	182± 10	209± 10	231± 9	248± 9
3 ppm	119± 5	123± 6	149± 10	181± 13	209± 14	232± 14	249± 15
6 ppm	119± 4	123± 5	146± 6	177± 9	204± 11	225± 12	242± 11
12 ppm	119± 4	123± 5	141± 6*	171± 10	191± 10**	207± 11**	220± 11**
24 ppm	119± 4	123± 5	122± 6**	145± 8**	155± 8**	170± 8**	181± 9**

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

STUDY NO. : 0292
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 6-7	7-7	8-7	9-7	10-7	11-7	12-7
Control	261± 13	276± 11	291± 12	301± 13	312± 13	321± 12	330± 12
1.5 ppm	266± 11	281± 11	296± 12	308± 14	317± 14	326± 14	336± 13
3 ppm	266± 15	281± 14	293± 16	307± 16	316± 16	326± 17	335± 17
6 ppm	259± 11	274± 11	287± 12	298± 13	308± 14	315± 15	325± 15
12 ppm	235± 10**	246± 9**	255± 9**	267± 8**	270± 8**	277± 8**	288± 10**
24 ppm	196± 12**	202± 12**	207± 13**	218± 14**	220± 14**	224± 16**	230± 17**

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

STUDY NO. : 0292
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 13-7
Control	336± 14
1.5 ppm	340± 13
3 ppm	341± 17
6 ppm	332± 15
12 ppm	292± 10**
24 ppm	233± 17**

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

APPENDIX B 2-2

BODY WEIGHT CHANGES (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0292
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-7	2-7	3-7	4-7	5-7
Control	94± 3	97± 3	112± 4	125± 5	137± 5	144± 5	151± 5
1.5 ppm	94± 3	96± 2	109± 3	124± 4	135± 4	145± 4	152± 5
3 ppm	94± 3	97± 4	110± 5	124± 6	136± 8	144± 8	152± 7
6 ppm	94± 3	96± 3	109± 3	124± 4	134± 4	143± 5	151± 5
12 ppm	94± 3	97± 3	107± 5*	121± 6	131± 8	138± 8	145± 9
24 ppm	94± 3	96± 3	96± 2**	110± 3**	116± 3**	121± 3**	126± 4**

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

STUDY NO. : 0292
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 6-7	7-7	8-7	9-7	10-7	11-7	12-7
Control	158± 4	165± 5	169± 4	173± 4	179± 3	184± 5	186± 4
1.5 ppm	159± 5	167± 5	170± 6	177± 7	182± 8	185± 8	191± 9
3 ppm	158± 8	165± 10	171± 11	177± 12	182± 12	184± 12	190± 13
6 ppm	157± 7	162± 8	167± 8	173± 9	176± 8	181± 9	185± 10
12 ppm	149± 8	153± 8	154± 9*	160± 8	160± 9*	163± 10*	168± 10
24 ppm	131± 3**	134± 3**	137± 4**	143± 4**	143± 3**	146± 4**	152± 4**

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

STUDY NO. : 0292
ANIMAL : RAT F344
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 13-7
Control	190± 7
1.5 ppm	192± 10
3 ppm	190± 12
6 ppm	187± 11
12 ppm	168± 9**
24 ppm	152± 4**

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

APPENDIX B 2-3

BODY WEIGHT CHANGES(THIRTEEN-WEEK STUDY:SUMMARY)

MOSUE : MALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-7	2-7	3-7	4-7	5-7
Control	22.2± 0.8	22.0± 0.8	23.4± 1.1	23.8± 1.2	24.9± 0.9	25.9± 1.4	26.5± 1.4
1.5 ppm	22.2± 0.7	22.1± 0.9	23.5± 1.0	24.3± 1.0	24.9± 1.1	25.6± 1.4	26.2± 1.4
3 ppm	22.2± 0.8	22.2± 0.8	23.5± 0.9	23.8± 1.2	24.6± 1.6	25.2± 1.7	25.8± 1.8
6 ppm	22.2± 0.8	22.0± 0.9	22.9± 1.3	23.1± 1.2	23.8± 1.3	24.2± 1.3*	24.9± 1.3
12 ppm	22.2± 0.8	21.7± 0.8	22.2± 0.8*	22.0± 0.8**	22.3± 0.9**	22.6± 1.0**	23.1± 1.0**
24 ppm	22.2± 0.7	22.1± 0.8	20.8± 0.8**	19.5± 1.2**	20.1± 1.0**	20.6± 0.7**	21.1± 0.9**

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 6-7	7-7	8-7	9-7	10-7	11-7	12-7
Control	27.0± 1.5	27.6± 1.8	28.6± 2.2	29.4± 2.1	30.2± 2.2	30.5± 2.4	31.1± 2.7
1.5 ppm	26.6± 1.1	27.1± 1.4	27.6± 1.3	28.0± 1.3	29.3± 1.7	29.9± 1.9	30.1± 1.8
3 ppm	26.7± 1.3	27.4± 1.6	28.0± 1.6	28.3± 1.6	29.0± 1.5	29.5± 1.7	30.4± 1.6
6 ppm	25.5± 1.5*	25.9± 1.3*	26.3± 1.5**	26.5± 1.4**	27.0± 1.5**	27.5± 1.3**	27.8± 1.7**
12 ppm	23.4± 1.1**	23.8± 1.0**	23.9± 1.1**	24.3± 0.9**	24.6± 1.1**	25.3± 1.2**	25.0± 1.1**
24 ppm	21.5± 1.0**	21.7± 0.9**	22.1± 1.0**	22.0± 1.0**	21.9± 1.2**	22.3± 1.3**	22.1± 1.4**

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : MALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 13-7
Control	31.7± 2.7
1.5 ppm	30.8± 2.1
3 ppm	30.6± 1.6
6 ppm	28.1± 1.6**
12 ppm	25.3± 1.1**
24 ppm	21.9± 1.2**

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

APPENDIX B 2-4

BODY WEIGHT CHANGES (THIRTEEN-WEEK STUDY: SUMMARY)

MOSUE: FEMALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 0-0	1-1	1-7	2-7	3-7	4-7	5-7
Control	18.4± 0.6	17.8± 0.7	19.4± 1.0	20.3± 0.8	21.4± 1.0	21.7± 0.8	22.2± 0.9
1.5 ppm	18.4± 0.6	17.7± 0.5	19.1± 0.7	19.9± 0.9	20.6± 1.0	21.5± 0.7	21.6± 0.5
3 ppm	18.4± 0.6	18.1± 0.6	19.5± 0.8	20.3± 0.6	21.2± 0.9	21.7± 0.5	21.9± 0.7
6 ppm	18.4± 0.6	17.9± 0.4	19.2± 0.4	20.1± 0.9	21.1± 0.8	21.3± 0.8	21.9± 1.2
12 ppm	18.4± 0.6	17.9± 0.7	18.5± 0.5*	18.8± 0.8**	19.4± 0.7**	19.8± 0.7**	20.3± 0.9**
24 ppm	18.4± 0.6	18.1± 0.6	18.0± 0.7**	17.2± 0.7**	17.6± 0.8**	17.9± 0.7**	18.4± 0.7**

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 6-7	7-7	8-7	9-7	10-7	11-7	12-7
Control	23.0± 1.0	23.5± 1.2	24.3± 1.6	23.7± 1.2	24.8± 1.4	25.7± 1.4	25.6± 2.0
1.5 ppm	22.3± 1.1	23.0± 0.9	22.8± 0.6	23.3± 0.7	23.7± 0.9	24.1± 1.5	24.4± 1.2
3 ppm	23.0± 1.6	23.5± 0.8	23.7± 0.9	24.2± 1.4	24.7± 1.4	25.1± 1.5	25.4± 1.3
6 ppm	22.4± 0.9	22.6± 1.3	23.2± 0.8	23.1± 1.0	24.2± 1.3	24.4± 1.1	24.4± 1.1
12 ppm	20.7± 0.6**	20.9± 0.7**	21.1± 0.9**	21.6± 0.8*	21.6± 0.6**	22.3± 0.7**	22.1± 0.5**
24 ppm	18.6± 0.5**	19.0± 0.7**	19.3± 0.7**	19.1± 0.4**	19.2± 0.6**	19.4± 0.6**	19.5± 0.6**

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
UNIT : g
REPORT TYPE : A1 13
SEX : FEMALE

BODY WEIGHT CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration week-day 13-7
Control	25.8± 1.5
1.5 ppm	24.4± 0.7
3 ppm	25.5± 1.0
6 ppm	24.8± 1.2
12 ppm	22.4± 0.4**
24 ppm	19.4± 0.6**

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

APPENDIX B 3-1

FOOD CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0292
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(6)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	14.7± 0.5	16.2± 0.6	17.0± 0.7	17.8± 1.0	16.9± 0.9	16.5± 0.9	17.0± 0.9
1.5 ppm	14.7± 1.1	16.3± 1.1	17.1± 1.1	17.5± 1.0	16.9± 1.1	17.0± 1.0	17.8± 0.7
3 ppm	14.4± 1.5	16.6± 2.0	17.1± 1.7	17.7± 1.3	17.6± 1.5	17.3± 1.3	17.6± 1.3
6 ppm	13.9± 0.6	16.1± 1.0	16.9± 1.0	18.1± 1.5	17.6± 1.1	17.1± 0.9	17.6± 1.2
12 ppm	12.8± 0.6**	15.1± 1.0	15.0± 1.0*	14.8± 1.2**	14.6± 1.1**	15.3± 0.9*	15.1± 0.9**
24 ppm	8.5± 0.7**	11.9± 0.7**	11.1± 0.4**	12.2± 0.6**	12.7± 0.9**	13.6± 1.0**	13.0± 0.7**

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

STUDY NO. : 0292
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)
Control	16.9± 0.6	16.8± 1.0	17.1± 1.0	17.0± 0.7	16.9± 1.0	17.1± 1.1
1.5 ppm	17.4± 1.1	17.6± 1.3	17.3± 1.3	17.5± 1.1	17.5± 0.9	17.2± 0.7
3 ppm	17.4± 1.3	17.6± 1.2	17.6± 1.2	17.8± 1.5	17.6± 1.1	17.0± 1.3
6 ppm	17.3± 1.1	17.5± 1.3	17.1± 1.0	17.1± 1.1	16.7± 1.0	17.0± 0.9
12 ppm	14.9± 0.7**	15.7± 1.0	14.4± 0.8**	15.2± 0.7**	15.5± 1.2*	15.4± 0.9**
24 ppm	12.9± 0.8**	14.0± 0.8**	12.9± 0.8**	13.1± 1.0**	13.3± 1.1**	13.3± 1.2**

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

APPENDIX B 3-2

FOOD CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0292
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(6)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	11.2± 0.8	11.6± 0.7	11.7± 1.0	11.4± 0.7	11.6± 0.7	11.1± 0.5	11.7± 0.5
1.5 ppm	11.1± 0.5	11.7± 0.9	11.5± 0.6	11.8± 0.4	11.6± 0.7	11.3± 0.6	11.9± 0.8
3 ppm	11.1± 0.6	11.7± 0.6	11.8± 1.1	11.6± 0.7	11.6± 0.7	11.0± 0.7	11.9± 1.0
6 ppm	11.0± 0.6	11.8± 0.6	12.1± 0.7	11.9± 0.5	12.1± 0.7	11.6± 0.9	11.5± 0.9
12 ppm	10.1± 0.7**	11.6± 1.1	11.5± 1.3	11.6± 2.1	11.4± 1.2	10.8± 1.4	10.6± 1.2*
24 ppm	7.3± 0.4**	10.0± 0.5**	9.2± 0.3**	9.2± 0.4**	9.2± 0.6**	9.9± 0.5**	9.3± 0.5**

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

STUDY NO. : 0292
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)
Control	11.3± 0.5	11.6± 0.6	11.4± 0.7	11.7± 0.6	11.3± 0.5	11.5± 1.1
1.5 ppm	11.5± 0.6	12.0± 1.1	11.8± 0.8	11.5± 0.8	12.1± 0.8	11.7± 0.7
3 ppm	11.6± 1.0	12.1± 1.0	11.6± 1.1	11.7± 0.9	12.1± 1.0	10.9± 1.0
6 ppm	11.5± 0.7	11.9± 1.0	11.5± 0.7	11.8± 0.8	11.8± 1.0	11.3± 1.1
12 ppm	10.2± 1.0	11.2± 0.9	10.1± 1.0**	10.3± 1.1**	11.0± 1.0	10.4± 0.9*
24 ppm	9.5± 0.4**	10.3± 0.3**	9.4± 0.4**	9.6± 0.5**	10.3± 0.6*	9.9± 0.6**

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

APPENDIX B 3-3

FOOD CONSUMPTION CHANGES (THIRTEEN-WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0293
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(6)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	3.8± 0.3	3.7± 0.2	3.8± 0.2	3.9± 0.2	4.0± 0.2	4.0± 0.3	4.0± 0.3
1.5 ppm	3.9± 0.3	4.0± 0.3	4.0± 0.3	4.0± 0.2	4.1± 0.3	4.0± 0.2	4.0± 0.3
3 ppm	3.9± 0.3	3.9± 0.6	3.8± 0.4	3.9± 0.5	4.0± 0.5	4.1± 0.3	4.3± 0.3*
6 ppm	3.8± 0.3	3.6± 0.2	3.8± 0.2	3.8± 0.2	3.8± 0.2	3.8± 0.2	3.9± 0.2
12 ppm	3.6± 0.3	3.4± 0.3	3.4± 0.3**	3.5± 0.3*	3.6± 0.2	3.5± 0.3**	3.6± 0.2**
24 ppm	2.8± 0.3**	2.5± 0.2**	2.8± 0.1**	3.0± 0.1**	3.0± 0.2**	3.0± 0.2**	3.1± 0.2**

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

STUDY NO. : 0293
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)
Control	4.2± 0.3	4.1± 0.2	4.2± 0.3	4.2± 0.2	4.3± 0.3	4.2± 0.2
1.5 ppm	4.1± 0.3	4.2± 0.2	4.5± 0.3	4.4± 0.3	4.3± 0.3	4.4± 0.3
3 ppm	4.5± 0.4	4.5± 0.5	4.5± 0.2*	4.7± 0.3**	4.8± 0.3**	4.6± 0.2**
6 ppm	3.8± 0.2*	3.8± 0.2	3.9± 0.1**	4.0± 0.2	3.9± 0.2**	3.8± 0.2**
12 ppm	3.5± 0.3**	3.4± 0.1*	3.6± 0.2**	3.6± 0.2**	3.4± 0.2**	3.5± 0.2**
24 ppm	3.1± 0.1**	3.0± 0.2**	3.2± 0.2**	3.3± 0.2**	3.0± 0.2**	3.2± 0.3**

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

APPENDIX B 3-4

FOOD CONSUMPTION CHANGES(THIRTEEN-WEEK STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0293
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(6)	2-7(7)	3-7(7)	4-7(7)	5-7(7)	6-7(7)	7-7(7)
Control	3.4± 0.3	3.6± 0.2	3.7± 0.2	3.8± 0.2	4.0± 0.2	4.0± 0.3	4.1± 0.2
1.5 ppm	3.5± 0.2	3.5± 0.2	3.6± 0.2	3.7± 0.2	3.7± 0.2**	3.8± 0.2	3.9± 0.1
3 ppm	3.5± 0.2	3.6± 0.1	3.7± 0.2	3.9± 0.2	3.8± 0.2	4.1± 0.4	4.4± 0.2**
6 ppm	3.4± 0.1	3.4± 0.1	3.6± 0.1	3.6± 0.2	3.8± 0.2	3.9± 0.2	3.9± 0.3
12 ppm	3.2± 0.1**	3.1± 0.2**	3.2± 0.1**	3.2± 0.2**	3.5± 0.2**	3.5± 0.1**	3.5± 0.2**
24 ppm	2.8± 0.2**	2.3± 0.1**	2.5± 0.2**	2.7± 0.2**	2.9± 0.2**	2.8± 0.2**	3.0± 0.2**

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

STUDY NO. : 0293
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)
Control	4.2± 0.3	4.0± 0.3	4.3± 0.3	4.4± 0.4	4.2± 0.4	4.2± 0.3
1.5 ppm	3.9± 0.2**	3.9± 0.2	4.0± 0.2*	4.2± 0.4	4.0± 0.3	3.9± 0.2
3 ppm	4.4± 0.2	4.5± 0.2**	4.6± 0.3*	4.7± 0.3	4.6± 0.3	4.7± 0.2
6 ppm	3.8± 0.2**	3.9± 0.1	4.1± 0.3	4.1± 0.2	3.9± 0.2	3.9± 0.1
12 ppm	3.4± 0.2**	3.4± 0.1**	3.5± 0.1**	3.7± 0.2**	3.5± 0.2*	3.5± 0.2**
24 ppm	2.9± 0.2**	2.8± 0.2**	2.9± 0.2**	3.0± 0.2**	2.9± 0.2**	3.0± 0.2**

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

APPENDIX B 4-1

HEMATOLOGY (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (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 $10^3/\mu\ell$	
Control	10	9.29±	0.13	16.3±	0.3	45.5±	1.0	49.0±	0.5	17.5±	0.3	35.8±	0.7	695±	25
1.5 ppm	10	9.13±	0.35	16.4±	0.3	45.1±	1.7	49.4±	0.4	18.0±	0.8	36.5±	1.4	671±	31
3 ppm	10	9.21±	0.42	16.4±	0.4	45.3±	2.2	49.2±	0.5	17.9±	0.9	36.3±	1.8	693±	41
6 ppm	10	9.23±	0.47	16.4±	0.5	45.5±	2.4	49.3±	0.3	17.8±	0.7	36.0±	1.5	695±	39
12 ppm	10	9.25±	0.17	16.6±	0.3	46.1±	0.9	49.8±	0.3**	18.0±	0.2	36.1±	0.4	666±	30
24 ppm	10	9.22±	0.24	16.9±	0.4**	47.0±	1.2	50.9±	0.4**	18.3±	0.2**	35.9±	0.4	681±	59

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RETICULOCYTE ‰		PROTHROMBIN TIME sec		APTT sec	
Control	10	29±	3	17.8±	3.6	20.0±	2.5
1.5 ppm	10	28±	4	18.0±	2.5	19.5±	1.8
3 ppm	10	27±	6	17.1±	1.7	19.7±	2.7
6 ppm	10	29±	4	16.9±	3.6	20.0±	3.2
12 ppm	10	30±	9	16.9±	3.3	20.4±	3.2
24 ppm	10	34±	5	15.9±	1.9	20.0±	2.7

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu l$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHERS	
Control	10	5.34±	1.62	0±	0	28±	6	2±	1	0±	0	5±	2	66±	7	0±	0
1.5 ppm	10	5.77±	1.28	0±	0	27±	7	1±	1	0±	0	4±	1	68±	8	0±	0
3 ppm	10	5.84±	1.75	0±	0	27±	4	1±	1	0±	0	4±	2	68±	4	0±	0
6 ppm	10	6.00±	1.89	0±	1	26±	4	1±	1	0±	0	4±	1	68±	5	0±	0
12 ppm	10	5.05±	1.55	0±	0	30±	8	2±	1	0±	0	4±	1	65±	8	0±	0
24 ppm	10	4.94±	1.40	0±	0	38±	7**	1±	1	0±	0	3±	1**	58±	8	0±	0

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

APPENDIX B 4-2

HEMATOLOGY (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (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 $10^3/\mu\ell$
Control	10	8.26± 0.50	16.2± 0.4	43.9± 2.7	53.1± 0.4	19.7± 1.4	37.1± 2.7	723± 55
1.5 ppm	10	8.61± 0.14	16.4± 0.3	45.8± 1.0	53.1± 0.6	19.0± 0.2	35.8± 0.6	757± 26
3 ppm	10	8.38± 0.10	16.1± 0.3	44.4± 0.6	53.0± 0.4	19.2± 0.2	36.1± 0.5	728± 36
6 ppm	9	8.37± 0.17	16.2± 0.6	44.2± 1.2	52.9± 0.6	19.3± 0.6	36.6± 1.5	745± 35
12 ppm	10	8.43± 0.38	16.4± 0.3	44.2± 2.1	52.5± 0.4*	19.5± 0.9	37.3± 1.7	700± 66
24 ppm	10	8.70± 0.25*	16.7± 0.4*	45.8± 1.3	52.7± 0.5	19.3± 0.4	36.6± 0.7	730± 72

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	RETICULOCYTE ‰		PROTHROMBIN TIME sec		APTT sec	
Control	10	29±	7	11.7±	0.4	14.0±	1.7
1.5 ppm	10	26±	4	11.8±	0.4	14.5±	1.5
3 ppm	10	26±	5	11.6±	0.3	14.5±	1.9
6 ppm	9	25±	6	11.9±	0.6	14.4±	1.6
12 ppm	10	25±	6	12.4±	0.6**	14.3±	1.5
24 ppm	10	28±	6	12.5±	0.3**	13.4±	1.5

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-1
SEX : FEMALE REPORT TYPE : AI

HEMATOLOGY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHERS	
Control	10	3.32±	1.19	0±	1	24±	6	1±	1	0±	0	3±	1	71±	6	0±	0
1.5 ppm	10	3.07±	1.24	0±	0	27±	10	1±	1	0±	0	4±	2	68±	10	0±	0
3 ppm	10	2.93±	1.63	1±	1	25±	6	1±	1	0±	0	3±	1	70±	6	0±	0
6 ppm	9	3.90±	1.11	0±	0	24±	6	2±	1	0±	0	4±	1	70±	6	0±	0
12 ppm	10	3.79±	1.64	0±	1	23±	5	2±	1	0±	0	3±	2	73±	7	0±	0
24 ppm	10	3.60±	1.14	0±	1	31±	6	1±	1	0±	0	4±	2	64±	5	0±	0

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

APPENDIX B 4-3

HEMATOLOGY (THIRTEEN-WEEK STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (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 $10^3/\mu\ell$	
Control	8	10.53±	0.30	16.0±	0.4	48.6±	1.5	46.1±	0.6	15.2±	0.2	32.9±	0.4	1343±	65
1.5 ppm	9	10.39±	0.36	15.6±	0.5	47.7±	2.1	45.9±	0.5	15.0±	0.2	32.7±	0.6	1249±	67
3 ppm	8	10.44±	0.51	15.7±	0.9	47.9±	2.5	45.9±	0.9	15.0±	0.3	32.7±	0.6	1202±	109**
6 ppm	9	10.54±	0.29	15.9±	0.4	48.0±	1.4	45.6±	0.7	15.1±	0.2	33.2±	0.7	1292±	77
12 ppm	10	10.53±	0.59	16.0±	0.6	48.2±	2.7	45.8±	1.1	15.2±	0.7	33.3±	1.7	1253±	73
24 ppm	9	10.58±	0.36	15.9±	0.4	48.2±	1.8	45.6±	0.5	15.1±	0.2	33.1±	0.7	1388±	103

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHERS	
Control	8	1.03±	0.63	0±	0	16±	3	1±	1	0±	0	3±	2	80±	5	0±	0
1.5 ppm	9	1.17±	0.72	0±	0	13±	4	1±	1	0±	0	3±	1	83±	3	0±	0
3 ppm	8	1.06±	0.63	0±	0	15±	2	1±	1	0±	0	3±	2	81±	3	0±	0
6 ppm	9	1.00±	0.73	0±	0	15±	4	1±	1	0±	0	3±	1	81±	5	0±	0
12 ppm	10	0.79±	0.63	0±	0	16±	4	1±	1	0±	0	4±	2	80±	5	0±	0
24 ppm	9	0.89±	0.95	0±	0	20±	11	0±	1	0±	0	4±	3	75±	13	0±	0

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

APPENDIX B 4-4

HEMATOLOGY (THIRTEEN-WEEK STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (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 $10^3/\mu\ell$	
Control	8	10.19±	0.41	15.7±	0.6	47.2±	1.8	46.4±	0.6	15.4±	0.2	33.2±	0.6	1176±	160
1.5 ppm	10	10.08±	0.26	15.6±	0.5	46.9±	1.2	46.5±	0.6	15.5±	0.3	33.4±	1.0	1118±	67
3 ppm	8	10.38±	0.41	16.0±	0.7	48.1±	1.8	46.3±	0.4	15.4±	0.2	33.2±	0.4	1122±	99
6 ppm	10	10.20±	0.60	15.7±	0.5	46.5±	1.7	45.7±	1.3	15.5±	0.9	33.8±	1.7	1116±	59
12 ppm	9	10.23±	0.56	15.9±	0.4	46.8±	2.2	45.8±	1.2	15.6±	0.9	34.1±	1.5	1055±	64
24 ppm	9	10.30±	0.34	15.8±	0.5	46.8±	1.7	45.5±	0.6*	15.3±	0.2	33.6±	0.7	1191±	69

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	WBC $10^3/\mu l$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHERS	
Control	8	1.41±	0.97	0±	0	15±	4	1±	2	0±	0	3±	1	81±	3	0±	0
1.5 ppm	10	0.99±	0.91	0±	1	21±	8	1±	1	0±	0	2±	1	75±	8	0±	0
3 ppm	8	0.83±	0.51	0±	1	20±	6	0±	0	0±	0	2±	1	77±	6	0±	0
6 ppm	10	0.75±	0.55	0±	0	19±	7	1±	1	0±	0	3±	2	77±	7	0±	0
12 ppm	9	0.41±	0.22*	0±	1	25±	11	0±	1	0±	0	4±	2	70±	12	0±	0
24 ppm	9	0.35±	0.25**	0±	1	30±	9**	0±	0	0±	0	3±	2	66±	9**	0±	0

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

APPENDIX B 5-1

BIOCHEMISTRY (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-2
SEX : MALE REPORT TYPE : A1

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	
Control	10	6.4±	0.1	3.9±	0.1	1.6±	0.1	0.16±	0.01	211±	13	55±	4	81±	14
1.5 ppm	10	6.4±	0.2	3.9±	0.1	1.6±	0.1	0.17±	0.02	218±	15	53±	3	82±	26
3 ppm	10	6.4±	0.1	3.9±	0.0	1.6±	0.0	0.17±	0.01	220±	14	54±	5	94±	23
6 ppm	10	6.4±	0.2	3.9±	0.1	1.6±	0.1	0.17±	0.01	211±	17	52±	3	70±	21
12 ppm	10	6.3±	0.1	3.9±	0.1	1.7±	0.1	0.16±	0.01	198±	13	48±	3**	59±	11
24 ppm	10	6.2±	0.1*	3.8±	0.0*	1.6±	0.1	0.17±	0.01	185±	11**	47±	3**	26±	7**

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-2
SEX : MALE REPORT TYPE : A1

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	
Control	10	106±	6	74±	8	46±	7	129±	22	262±	17	2±	1	108±	12
1.5 ppm	10	103±	8	75±	7	45±	7	132±	23	260±	12	1±	1	103±	7
3 ppm	10	106±	9	75±	7	45±	6	132±	20	260±	14	1±	1	112±	10
6 ppm	10	101±	7	73±	8	44±	4	118±	19	267±	22	1±	1	105±	9
12 ppm	10	96±	6*	68±	4	40±	3	109±	25	276±	20	1±	1	108±	14
24 ppm	10	89±	5**	73±	3	41±	3	119±	11	322±	26**	2±	1	121±	10*

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-2
SEX : MALE REPORT TYPE : A1

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	
Control	10	17.7±	1.3	0.6±	0.0	143±	1	3.3±	0.2	106±	1	10.3±	0.1	5.1±	1.0
1.5 ppm	10	18.1±	1.3	0.6±	0.1	142±	1	3.2±	0.2	106±	1	10.2±	0.1	5.1±	0.8
3 ppm	10	17.8±	1.4	0.6±	0.1	142±	1	3.2±	0.4	106±	1	10.3±	0.1	5.2±	0.7
6 ppm	10	17.7±	1.7	0.6±	0.1	142±	1	3.2±	0.3	106±	2	10.2±	0.2	5.2±	0.9
12 ppm	10	18.3±	1.7	0.6±	0.1	142±	1	3.4±	0.3	106±	2	10.2±	0.1	5.5±	1.1
24 ppm	10	18.3±	2.4	0.6±	0.1	142±	1	3.4±	0.3	106±	1	10.0±	0.2**	5.7±	0.9

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

APPENDIX B 5-2

BIOCHEMISTRY (THIRTEEN-WEEK STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-2
SEX : FEMALE REPORT TYPE : A1

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
Control	10	6.4± 0.2	3.9± 0.1	1.6± 0.1	0.17± 0.01	153± 7	79± 5	18± 7
1.5 ppm	10	6.4± 0.2	4.0± 0.1	1.6± 0.0	0.18± 0.01	143± 8*	79± 5	17± 2
3 ppm	10	6.3± 0.2	3.9± 0.1	1.6± 0.0	0.17± 0.02	140± 8**	74± 6	17± 3
6 ppm	9	6.3± 0.3	3.9± 0.1	1.7± 0.1	0.17± 0.01	140± 10**	76± 7	18± 3
12 ppm	10	6.1± 0.3**	3.8± 0.2*	1.7± 0.1	0.18± 0.01	140± 8**	65± 6**	16± 2
24 ppm	10	6.0± 0.1**	3.7± 0.1**	1.6± 0.1	0.18± 0.01	132± 9**	58± 8**	15± 3

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-2
SEX : FEMALE REPORT TYPE : A1

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	
Control	10	144±	9	67±	8	37±	9	143±	31	174±	19	2±	1	110±	16
1.5 ppm	10	143±	5	69±	7	40±	10	186±	75	187±	21	2±	1	123±	27
3 ppm	10	133±	12	68±	12	36±	11	173±	109	186±	16	2±	1	114±	37
6 ppm	9	138±	10	67±	4	37±	7	137±	37	201±	14*	2±	1	107±	18
12 ppm	10	122±	12**	69±	5	35±	4	171±	45	211±	30**	2±	1	117±	19
24 ppm	10	108±	12**	74±	3	36±	3	178±	39	250±	18**	2±	1	126±	14

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 014-2
SEX : FEMALE REPORT TYPE : A1

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	
Control	10	17.1±	1.6	0.6±	0.0	142±	1	3.2±	0.3	107±	1	10.0±	0.2	5.1±	1.3
1.5 ppm	10	17.4±	2.0	0.6±	0.0	142±	2	3.2±	0.3	108±	2	10.1±	0.2	4.7±	1.2
3 ppm	10	16.8±	2.3	0.6±	0.1	142±	1	3.4±	0.2	108±	2	10.0±	0.2	4.8±	1.2
6 ppm	9	17.8±	1.9	0.6±	0.1	142±	2	3.2±	0.4	107±	2	10.1±	0.3	5.0±	1.3
12 ppm	10	17.8±	1.7	0.6±	0.1	142±	2	3.6±	0.3*	108±	2	9.9±	0.3	5.0±	1.1
24 ppm	10	18.9±	1.9	0.6±	0.1	143±	2	3.6±	0.2**	109±	2	9.9±	0.1	5.0±	1.3

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

APPENDIX B 5-3

BIOCHEMISTRY (THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: MALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-2
SEX : MALE REPORT TYPE : A1

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	
Control	8	5.2±	0.1	2.9±	0.1	1.3±	0.1	0.19±	0.01	250±	18	79±	10	23±	8
1.5 ppm	9	5.0±	0.2	2.8±	0.1	1.3±	0.1	0.19±	0.01	177±	25**	75±	5	20±	6
3 ppm	7	5.0±	0.2	2.7±	0.1*	1.2±	0.1	0.18±	0.01	171±	20**	75±	8	18±	5
6 ppm	10	5.1±	0.2	2.9±	0.1	1.3±	0.0	0.21±	0.08	200±	39	74±	9	19±	7
12 ppm	10	5.1±	0.2	2.9±	0.1	1.3±	0.1	0.20±	0.01	179±	47**	68±	13	12±	4*
24 ppm	9	5.0±	0.1	2.9±	0.1	1.4±	0.1	0.20±	0.02*	179±	47**	73±	11	9±	2**

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-2
SEX : MALE REPORT TYPE : A1

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	
Control	8	151±	22	43±	5	17±	2	189±	33	159±	7	1±	1	79±	54
1.5 ppm	9	142±	12	54±	16	21±	7	214±	63	170±	20	1±	1	91±	54
3 ppm	7	146±	15	60±	10	19±	4	229±	47	174±	22	1±	1	78±	17
6 ppm	10	143±	16	51±	8	21±	7	222±	120	163±	6	2±	1	89±	47
12 ppm	10	124±	24*	54±	13	23±	6	214±	67	190±	15**	1±	1	85±	46
24 ppm	9	111±	15**	52±	18	18±	5	210±	86	196±	14**	1±	1	94±	43

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-2
SEX : MALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	UREA NITROGEN mg/dℓ		SODIUM mEq/ℓ		POTASSIUM mEq/ℓ		CHLORIDE mEq/ℓ		CALCIUM mg/dℓ		INORGANIC PHOSPHORUS mg/dℓ	
Control	8	27.5±	5.9	152±	1	4.3±	0.3	124±	2	8.6±	0.3	7.0±	1.6
1.5 ppm	9	27.3±	5.4	153±	1	4.6±	0.5	126±	2	8.5±	0.3	6.9±	0.8
3 ppm	7	28.6±	4.4	153±	1	4.5±	0.4	125±	2	8.5±	0.3	6.9±	1.1
6 ppm	10	26.6±	3.9	153±	1	4.4±	0.4	125±	2	8.5±	0.3	6.9±	1.0
12 ppm	10	28.1±	10.7	153±	2	4.2±	0.6	125±	3	8.4±	0.2	7.0±	1.2
24 ppm	9	26.3±	4.3	154±	2	4.3±	0.4	126±	3	8.5±	0.2	7.4±	1.2

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

APPENDIX B 5-4

BIOCHEMISTRY (THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: FEMALE

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-2
SEX : FEMALE REPORT TYPE : A1

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	
Control	8	5.0±	0.1	3.0±	0.1	1.6±	0.1	0.18±	0.04	179±	32	74±	6	19±	7
1.5 ppm	10	5.1±	0.2	3.1±	0.1	1.6±	0.1	0.18±	0.02	169±	24	70±	8	18±	7
3 ppm	9	5.2±	0.3	3.1±	0.2	1.5±	0.1	0.19±	0.04	176±	22	71±	6	20±	9
6 ppm	10	5.1±	0.2	3.1±	0.1	1.6±	0.1	0.19±	0.04	177±	20	73±	7	19±	6
12 ppm	9	5.2±	0.2*	3.2±	0.1**	1.6±	0.1	0.21±	0.05*	183±	20	62±	7**	11±	3*
24 ppm	9	5.3±	0.2**	3.2±	0.1**	1.6±	0.1	0.20±	0.02**	150±	39	65±	8*	10±	2*

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-2
SEX : FEMALE REPORT TYPE : A1

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	
Control	8	137±	16	52±	8	21±	4	190±	30	235±	26	1±	1	70±	35
1.5 ppm	10	134±	23	63±	10	22±	2	229±	69	259±	26	2±	1	95±	55
3 ppm	9	134±	14	93±	91	35±	36	285±	166	271±	15	1±	1	105±	62
6 ppm	10	137±	21	69±	20	27±	9	226±	45	263±	30	2±	1	76±	26
12 ppm	9	111±	17*	71±	22	25±	5	275±	117	299±	26**	1±	1	110±	106
24 ppm	9	102±	13**	89±	43	27±	7	374±	223	375±	64**	1±	1	275±	265

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 014-2
SEX : FEMALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
SURVIVAL ANIMALS (14)

Group Name	NO. of Animals	UREA NITROGEN mg/dℓ		SODIUM mEq/ℓ		POTASSIUM mEq/ℓ		CHLORIDE mEq/ℓ		CALCIUM mg/dℓ		INORGANIC PHOSPHORUS mg/dℓ	
Control	8	20.5±	1.6	152±	2	4.2±	0.6	125±	2	8.6±	0.2	6.4±	0.9
1.5 ppm	10	23.5±	4.6	152±	2	4.6±	0.6	125±	2	8.6±	0.1	6.0±	1.1
3 ppm	9	23.3±	3.7	151±	1	4.4±	0.6	123±	3	8.5±	0.1	6.6±	1.0
6 ppm	10	22.7±	1.9	151±	1	4.5±	0.4	123±	3	8.5±	0.2	5.9±	1.6
12 ppm	9	24.8±	3.0*	152±	2	4.4±	0.4	124±	3	8.5±	0.2	5.7±	1.2
24 ppm	9	27.1±	2.6**	152±	2	4.4±	0.4	125±	2	8.6±	0.3	7.0±	1.5

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

APPENDIX B 6-1

URINALYSIS (THIRTEEN-WEEK STUDY: SUMMARY)

RAT: MALE

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 013-4
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
Control	10	0	0	0	2	5	3	0		0	0	6	4	0	0		10	0	0	0	0	0		2	6	2	0	0	0		10	0	0	0	
1.5 ppm	10	0	0	0	4	3	3	0		0	1	8	1	0	0		10	0	0	0	0	0		4	4	2	0	0	0		10	0	0	0	
3 ppm	10	0	0	0	4	4	2	0		0	0	6	4	0	0		10	0	0	0	0	0		4	5	1	0	0	0		10	0	0	0	
6 ppm	10	0	0	1	2	3	4	0		0	0	3	6	1	0		10	0	0	0	0	0		3	6	1	0	0	0		10	0	0	0	
12 ppm	10	0	0	1	5	2	2	0		0	4	5	1	0	0		10	0	0	0	0	0		7	3	0	0	0	0		10	0	0	0	
24 ppm	10	0	0	1	4	2	2	1		0	4	3	3	0	0		10	0	0	0	0	0		7	2	1	0	0	0		10	0	0	0	

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 013-4
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
Control	10	10	0	0	0	0		10	0	0	0	0	
1.5 ppm	10	10	0	0	0	0		10	0	0	0	0	
3 ppm	10	10	0	0	0	0		10	0	0	0	0	
6 ppm	10	10	0	0	0	0		10	0	0	0	0	
12 ppm	10	10	0	0	0	0		10	0	0	0	0	
24 ppm	10	10	0	0	0	0		10	0	0	0	0	

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

PPENDIX B 6-2

URINALYSIS (THIRTEEN-WEEK STUDY: SUMMARY)

RAT: FEMALE

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 013-4
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
Control	10	0	0	0	0	6	4	0		1	5	4	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
1.5 ppm	10	0	0	0	2	4	4	0		1	6	2	1	0	0		10	0	0	0	0	0		9	1	0	0	0	0		10	0	0	0	
3 ppm	10	0	0	0	1	5	4	0		0	6	3	1	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
6 ppm	10	0	0	0	2	6	2	0		1	8	1	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
12 ppm	10	0	0	0	1	3	5	1		1	6	3	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	
24 ppm	10	0	0	1	0	3	5	1		1	7	2	0	0	0		10	0	0	0	0	0		10	0	0	0	0	0		10	0	0	0	

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

STUDY NO. : 0292
ANIMAL : RAT F344
SAMPLING DATE : 013-4
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
Control	10	10	0	0	0	0		10	0	0	0	0	
1.5 ppm	10	10	0	0	0	0		10	0	0	0	0	
3 ppm	10	10	0	0	0	0		10	0	0	0	0	
6 ppm	10	10	0	0	0	0		10	0	0	0	0	
12 ppm	10	10	0	0	0	0		10	0	0	0	0	
24 ppm	10	10	0	0	0	0		10	0	0	0	0	

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

(HCL101)

PPENDIX B 6-3

URINALYSIS (THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: MALE

STUDY NO. : 0293
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
Control	9	0	0	1	0	1	5	2		0	0	8	1	0	0		9	0	0	0	0	0		0	3	6	0	0	0		9	0	0	0	0	
1.5 ppm	10	0	0	0	3	3	2	2		0	0	5	1	1	3		10	0	0	0	0	0		1	4	3	2	0	0		10	0	0	0	0	
3 ppm	9	0	0	1	3	1	4	0		0	0	9	0	0	0		9	0	0	0	0	0		1	5	2	1	0	0		9	0	0	0	0	
6 ppm	10	0	0	1	0	5	4	0		0	1	7	2	0	0		10	0	0	0	0	0		1	2	4	3	0	0		10	0	0	0	0	
12 ppm	10	0	0	3	2	0	0	5	*	0	0	9	1	0	0		10	0	0	0	0	0		0	5	5	0	0	0		10	0	0	0	0	
24 ppm	10	0	1	1	2	2	1	3		0	1	9	0	0	0		10	0	0	0	0	0		0	4	4	2	0	0		10	0	0	0	0	

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-6
SEX : MALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
Control	9	9	0	0	0	0	
1.5 ppm	10	10	0	0	0	0	
3 ppm	9	9	0	0	0	0	
6 ppm	10	10	0	0	0	0	
12 ppm	10	10	0	0	0	0	
24 ppm	10	10	0	0	0	0	

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

APPENDIX B 6-4

URINALYSIS (THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: FEMALE

STUDY NO. : 0293
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
Control	10	0	0	3	0	4	3	0		0	0	10	0	0	0		10	0	0	0	0	0		4	6	0	0	0	0		10	0	0	0	0	
1.5 ppm	10	0	1	0	1	5	3	0		0	1	9	0	0	0		10	0	0	0	0	0		1	9	0	0	0	0		10	0	0	0	0	
3 ppm	10	0	0	0	2	3	5	0		0	1	9	0	0	0		10	0	0	0	0	0		4	6	0	0	0	0		10	0	0	0	0	
6 ppm	10	0	0	0	1	2	6	1		0	0	9	1	0	0		10	0	0	0	0	0		0	8	2	0	0	0	*	10	0	0	0	0	
12 ppm	10	0	0	0	1	2	5	2		0	0	10	0	0	0		10	0	0	0	0	0		2	8	0	0	0	0		10	0	0	0	0	
24 ppm	9	0	0	1	1	0	4	3		0	1	7	1	0	0		9	0	0	0	0	0		0	7	2	0	0	0	*	9	0	0	0	0	

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

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
SAMPLING DATE : 013-6
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
Control	10	10	0	0	0	0	
1.5 ppm	10	10	0	0	0	0	
3 ppm	10	10	0	0	0	0	
6 ppm	10	10	0	0	0	0	
12 ppm	10	10	0	0	0	0	
24 ppm	9	9	0	0	0	0	

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

PPENDIX B 7-1

GROSS FINDINGS (THIRTEEN-WEEK STUDY: SUMMARY)

RAT: MALE : SACRIFICED ANIMALS

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	1.5 ppm 10 (%)	3 ppm 10 (%)	6 ppm 10 (%)
liver	herniation		0 (0)	1 (10)	0 (0)	0 (0)

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	12 ppm	24 ppm
		NO. of Animals	10 (%)	10 (%)
liver	herniation		0 (0)	0 (0)

APPENDIX B 7-2

GROSS FINDINGS (THIRTEEN-WEEK STUDY: SUMMARY)

RAT: FEMALE : SACRIFICED ANIMALS

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	1.5 ppm 10 (%)	3 ppm 10 (%)	6 ppm 10 (%)
liver	nodule		0 (0)	0 (0)	0 (0)	1 (10)
	herniation		0 (0)	0 (0)	1 (10)	0 (0)
eye	turbid		0 (0)	0 (0)	0 (0)	1 (10)

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	12 ppm 10 (%)	24 ppm 10 (%)
liver	nodule		0 (0)	0 (0)
	herniation		0 (0)	0 (0)
eye	turbid		0 (0)	0 (0)

APPENDIX B 7-3

GROSS FINDINGS (THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: MALE : SACRIFICED ANIMALS

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	Control 9 (%)	1.5 ppm 10 (%)	3 ppm 9 (%)	6 ppm 10 (%)
spleen	black zone		0 (0)	0 (0)	1 (11)	0 (0)
liver	white zone		0 (0)	0 (0)	0 (0)	0 (0)
kidney	hydronephrosis		0 (0)	1 (10)	2 (22)	1 (10)

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	12 ppm 10 (%)	24 ppm 10 (%)
spleen	black zone		0 (0)	0 (0)
liver	white zone		1 (10)	0 (0)
kidney	hydronephrosis		1 (10)	0 (0)

APPENDIX B 7-4

GROSS FINDINGS (THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: FEMALE : SACRIFICED ANIMALS

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name NO. of Animals	Control 10 (%)	1.5 ppm 10 (%)	3 ppm 10 (%)	6 ppm 10 (%)
spleen	black zone		0 (0)	1 (10)	1 (10)	0 (0)

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (14W)

Organ	Findings	Group Name	12 ppm		24 ppm	
		NO. of Animals	10	(%)	9	(%)
spleen	black zone		0	(0)	1	(11)

(HPT080)

APPENDIX B 7-5

GROSS FINDINGS (THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: MALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / NO. of Animals	Control 1 (%)	1.5 ppm 0 (%)	3 ppm 1 (%)	6 ppm 0 (%)
thymus	atrophic		0 (0)	- (-)	1 (100)	- (-)
kidney	hydronephrosis		1 (100)	- (-)	1 (100)	- (-)

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name NO. of Animals	12 ppm 0 (%)	24 ppm 0 (%)
thymus	atrophic		- (-)	- (-)
kidney	hydronephrosis		- (-)	- (-)

APPENDIX B 8-1

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY),ABSOLUTE

RAT : MALE

STUDY NO. : 0292
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
Control	10	316± 13	0.270± 0.022	0.048± 0.004	2.709± 0.093	0.904± 0.032	0.990± 0.044
1.5 ppm	10	319± 13	0.283± 0.022	0.049± 0.007	2.730± 0.094	0.900± 0.033	0.997± 0.054
3 ppm	10	319± 16	0.288± 0.042	0.047± 0.003	2.694± 0.078	0.898± 0.043	0.981± 0.038
6 ppm	10	310± 15	0.267± 0.034	0.052± 0.006	2.693± 0.072	0.886± 0.052	1.016± 0.063
12 ppm	10	269± 10**	0.186± 0.032**	0.054± 0.007	2.629± 0.133	0.821± 0.038**	0.931± 0.026*
24 ppm	10	215± 15**	0.123± 0.026**	0.055± 0.006*	2.576± 0.087*	0.738± 0.036**	0.831± 0.041**

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

(HCL040)

STUDY NO. : 0292
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
Control	10	1.786± 0.096	0.517± 0.041	8.277± 0.479	1.844± 0.057
1.5 ppm	10	1.778± 0.082	0.504± 0.015	8.225± 0.493	1.841± 0.049
3 ppm	10	1.784± 0.066	0.503± 0.033	8.248± 0.539	1.853± 0.054
6 ppm	10	1.769± 0.051	0.506± 0.026	7.952± 0.600	1.830± 0.041
12 ppm	10	1.648± 0.058**	0.443± 0.016**	6.903± 0.350**	1.839± 0.061
24 ppm	10	1.403± 0.062**	0.368± 0.031**	5.375± 0.412**	1.731± 0.050**

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

(HCL040)

APPENDIX B 8-2

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY),ABSOLUTE

RAT : FEMALE

STUDY NO. : 0292
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
Control	10	175± 6	0.193± 0.025	0.051± 0.004	0.098± 0.008	0.585± 0.030	0.729± 0.038
1.5 ppm	10	178± 9	0.208± 0.023	0.052± 0.005	0.098± 0.008	0.613± 0.038	0.727± 0.036
3 ppm	10	175± 12	0.197± 0.021	0.054± 0.005	0.103± 0.008	0.605± 0.048	0.713± 0.044
6 ppm	10	172± 10	0.195± 0.024	0.055± 0.005	0.097± 0.012	0.600± 0.034	0.717± 0.043
12 ppm	10	152± 8**	0.154± 0.021**	0.059± 0.007**	0.095± 0.008	0.566± 0.028	0.699± 0.022
24 ppm	10	137± 3**	0.123± 0.016**	0.060± 0.005**	0.082± 0.007**	0.549± 0.032	0.664± 0.026**

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

STUDY NO. : 0292
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
Control	10	1.110± 0.064	0.324± 0.026	4.213± 0.192	1.685± 0.039
1.5 ppm	10	1.109± 0.077	0.345± 0.033	4.328± 0.221	1.692± 0.034
3 ppm	10	1.115± 0.068	0.335± 0.023	4.170± 0.318	1.715± 0.043
6 ppm	10	1.089± 0.061	0.330± 0.015	4.195± 0.321	1.698± 0.051
12 ppm	10	1.083± 0.049	0.298± 0.027	3.811± 0.258**	1.658± 0.027
24 ppm	10	1.015± 0.042**	0.278± 0.019**	3.435± 0.113**	1.618± 0.033**

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

APPENDIX B 8-3

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY),ABSOLUTE

MOUSE: MALE

STUDY NO. : 0293
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
Control	9	28.0± 2.7	0.033± 0.004	0.011± 0.003	0.216± 0.024	0.142± 0.012	0.169± 0.020
1.5 ppm	10	27.5± 1.8	0.035± 0.008	0.010± 0.003	0.223± 0.016	0.151± 0.011	0.166± 0.011
3 ppm	9	26.9± 1.6	0.035± 0.002	0.011± 0.002	0.220± 0.036	0.151± 0.015	0.164± 0.006
6 ppm	10	25.0± 1.5**	0.037± 0.006	0.012± 0.004	0.215± 0.024	0.140± 0.007	0.169± 0.013
12 ppm	10	22.1± 1.1**	0.031± 0.003	0.010± 0.001	0.209± 0.024	0.125± 0.008**	0.162± 0.010
24 ppm	10	19.3± 1.3**	0.024± 0.005*	0.008± 0.001	0.197± 0.037	0.113± 0.007**	0.159± 0.012

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

STUDY NO. : 0293
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
Control	9	0.426± 0.030	0.049± 0.005	1.140± 0.068	0.443± 0.015
1.5 ppm	10	0.511± 0.218	0.056± 0.007	1.140± 0.084	0.440± 0.014
3 ppm	9	0.626± 0.380	0.058± 0.012	1.145± 0.070	0.444± 0.018
6 ppm	10	0.438± 0.094	0.047± 0.007	1.034± 0.056**	0.434± 0.013
12 ppm	10	0.471± 0.328	0.038± 0.007*	0.903± 0.039**	0.430± 0.014
24 ppm	10	0.343± 0.027**	0.033± 0.007**	0.772± 0.043**	0.402± 0.014**

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

APPENDIX B 8-4

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY),ABSOLUTE

MOUSE : FEMALE

STUDY NO. : 0293
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
Control	10	21.9± 1.4	0.043± 0.010	0.013± 0.001	0.034± 0.006	0.129± 0.007	0.164± 0.014
1.5 ppm	10	20.6± 0.8	0.041± 0.003	0.013± 0.002	0.031± 0.004	0.121± 0.010	0.159± 0.010
3 ppm	10	21.4± 0.9	0.042± 0.008	0.014± 0.002	0.033± 0.004	0.128± 0.006	0.164± 0.012
6 ppm	10	20.9± 0.9	0.041± 0.005	0.014± 0.002	0.034± 0.004	0.125± 0.006	0.164± 0.011
12 ppm	10	18.7± 0.3**	0.034± 0.005	0.012± 0.002	0.027± 0.005	0.117± 0.009*	0.159± 0.011
24 ppm	9	16.7± 0.6**	0.029± 0.003**	0.010± 0.002**	0.021± 0.002**	0.107± 0.010**	0.154± 0.019

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

STUDY NO. : 0293
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
Control	10	0.308± 0.017	0.066± 0.010	1.009± 0.080	0.454± 0.016
1.5 ppm	10	0.298± 0.018	0.057± 0.009	0.926± 0.078	0.453± 0.013
3 ppm	10	0.311± 0.009	0.058± 0.009	0.978± 0.047	0.456± 0.011
6 ppm	10	0.301± 0.011	0.057± 0.009	0.956± 0.032	0.458± 0.014
12 ppm	10	0.277± 0.018**	0.043± 0.005**	0.785± 0.036**	0.449± 0.019
24 ppm	9	0.258± 0.015**	0.035± 0.005**	0.681± 0.044**	0.419± 0.015**

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

APENDIX B 9-1

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY),RELATIVE

RAT : MALE

STUDY NO. : 0292
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
Control	10	316± 13	0.086± 0.007	0.015± 0.001	0.859± 0.034	0.287± 0.009	0.314± 0.015
1.5 ppm	10	319± 13	0.089± 0.006	0.016± 0.002	0.856± 0.042	0.282± 0.009	0.313± 0.020
3 ppm	10	319± 16	0.090± 0.011	0.015± 0.001	0.847± 0.046	0.282± 0.011	0.308± 0.012
6 ppm	10	310± 15	0.086± 0.009	0.017± 0.002	0.872± 0.040	0.286± 0.008	0.328± 0.019
12 ppm	10	269± 10**	0.069± 0.011**	0.020± 0.003*	0.976± 0.044**	0.305± 0.014**	0.346± 0.006*
24 ppm	10	215± 15**	0.057± 0.010**	0.026± 0.002**	1.202± 0.060**	0.344± 0.017**	0.388± 0.016**

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

STUDY NO. : 0292
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
Control	10	0.566± 0.011	0.164± 0.011	2.620± 0.053	0.585± 0.028
1.5 ppm	10	0.557± 0.018	0.158± 0.008	2.577± 0.098	0.577± 0.021
3 ppm	10	0.560± 0.013	0.158± 0.006	2.588± 0.073	0.583± 0.028
6 ppm	10	0.572± 0.020	0.163± 0.007	2.567± 0.089	0.592± 0.028
12 ppm	10	0.612± 0.022**	0.165± 0.005	2.562± 0.089	0.683± 0.025**
24 ppm	10	0.654± 0.022**	0.171± 0.008	2.501± 0.063**	0.808± 0.041**

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

APPENDIX B 9-2

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY), RELATIVE

RAT : FEMALE

STUDY NO. : 0292
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
Control	10	175± 6	0.110± 0.013	0.029± 0.003	0.056± 0.005	0.335± 0.012	0.418± 0.020
1.5 ppm	10	178± 9	0.117± 0.013	0.030± 0.003	0.055± 0.004	0.345± 0.013	0.410± 0.020
3 ppm	10	175± 12	0.113± 0.011	0.031± 0.003	0.059± 0.004	0.345± 0.013	0.408± 0.024
6 ppm	10	172± 10	0.113± 0.012	0.032± 0.003	0.056± 0.006	0.349± 0.010	0.417± 0.020
12 ppm	10	152± 8**	0.101± 0.012	0.039± 0.003**	0.062± 0.004*	0.373± 0.009**	0.461± 0.015**
24 ppm	10	137± 3**	0.090± 0.012**	0.044± 0.004**	0.060± 0.005	0.400± 0.023**	0.484± 0.017**

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

STUDY NO. : 0292
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
Control	10	0.636± 0.031	0.185± 0.012	2.413± 0.079	0.965± 0.029
1.5 ppm	10	0.625± 0.028	0.194± 0.014	2.438± 0.083	0.954± 0.043
3 ppm	10	0.638± 0.026	0.192± 0.011	2.383± 0.084	0.984± 0.059
6 ppm	10	0.632± 0.019	0.192± 0.009	2.435± 0.066	0.988± 0.051
12 ppm	10	0.712± 0.013**	0.196± 0.012	2.505± 0.087*	1.093± 0.059**
24 ppm	10	0.740± 0.029**	0.203± 0.014	2.504± 0.050*	1.180± 0.042**

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

APPENDIX B 9-3

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY), RELATIVE

MOUSE : MALE

STUDY NO. : 0293
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
Control	9	28.0± 2.7	0.119± 0.009	0.039± 0.012	0.775± 0.089	0.510± 0.029	0.603± 0.047
1.5 ppm	10	27.5± 1.8	0.127± 0.026	0.036± 0.010	0.815± 0.097	0.549± 0.048	0.605± 0.027
3 ppm	9	26.9± 1.6	0.129± 0.009	0.040± 0.007	0.822± 0.139	0.561± 0.043*	0.612± 0.037
6 ppm	10	25.0± 1.5**	0.147± 0.020**	0.047± 0.017	0.862± 0.081	0.560± 0.028*	0.678± 0.055**
12 ppm	10	22.1± 1.1**	0.139± 0.012*	0.043± 0.006	0.950± 0.123**	0.565± 0.029**	0.733± 0.055**
24 ppm	10	19.3± 1.3**	0.122± 0.025	0.041± 0.005	1.014± 0.139**	0.588± 0.019**	0.826± 0.050**

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

STUDY NO. : 0293
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
Control	9	1.528± 0.103	0.178± 0.021	4.086± 0.211	1.594± 0.146
1.5 ppm	10	1.897± 0.985	0.203± 0.031	4.151± 0.308	1.608± 0.125
3 ppm	9	2.308± 1.346*	0.216± 0.039*	4.259± 0.120	1.654± 0.067
6 ppm	10	1.756± 0.381	0.189± 0.026	4.142± 0.098	1.740± 0.093*
12 ppm	10	2.134± 1.491*	0.173± 0.030	4.087± 0.109	1.950± 0.116**
24 ppm	10	1.778± 0.094**	0.170± 0.027	4.006± 0.143	2.089± 0.111**

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

APENDIX B 9-4

ORGAN WEIGHT (THIRTEEN-WEEK STUDY: SUMMARY), RELATIVE

MOUSE : FEMALE

STUDY NO. : 0293
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
Control	10	21.9± 1.4	0.194± 0.041	0.059± 0.006	0.154± 0.027	0.587± 0.024	0.747± 0.061
1.5 ppm	10	20.6± 0.8	0.196± 0.009	0.061± 0.009	0.151± 0.020	0.586± 0.035	0.772± 0.050
3 ppm	10	21.4± 0.9	0.199± 0.033	0.064± 0.009	0.156± 0.017	0.599± 0.028	0.770± 0.052
6 ppm	10	20.9± 0.9	0.197± 0.022	0.066± 0.007	0.162± 0.021	0.602± 0.047	0.786± 0.040
12 ppm	10	18.7± 0.3**	0.181± 0.027	0.065± 0.008	0.145± 0.026	0.625± 0.044	0.850± 0.053**
24 ppm	9	16.7± 0.6**	0.173± 0.020	0.060± 0.011	0.126± 0.009*	0.641± 0.043*	0.921± 0.136**

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

STUDY NO. : 0293
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
Control	10	1.405± 0.061	0.300± 0.044	4.600± 0.195	2.074± 0.118
1.5 ppm	10	1.448± 0.049	0.274± 0.046	4.492± 0.280	2.198± 0.073*
3 ppm	10	1.457± 0.069	0.270± 0.040	4.581± 0.123	2.136± 0.084
6 ppm	10	1.443± 0.041	0.270± 0.037	4.583± 0.185	2.197± 0.129*
12 ppm	10	1.480± 0.081	0.231± 0.026**	4.186± 0.161**	2.393± 0.084**
24 ppm	9	1.546± 0.089**	0.210± 0.031**	4.069± 0.183**	2.508± 0.107**

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

APPENDIX B 10-1

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN-WEEK STUDY: SUMMARY)

RAT : MALE : SACRIFICED ANIMALS

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Control				1.5 ppm				3 ppm				6 ppm			
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
	Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																	
nasal cavit		<10>				<10>				<10>				<10>			
	adhesion	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)
	inflammatory 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)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	respiratory metaplasia:olfactory epithelium	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)
	squamous cell metaplasia:respiratory epithelium	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)
	squamous cell metaplasia:olfactory epithelium	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)
	atrophy:olfactory epithelium	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)
	atrophy:respiratory epithelium	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)
	necrosis:olfactory epithelium	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				10			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]										
nasal cavit			<10>				<10>			
	adhesion		0	0	0	0	2	0	0	0
			(0)	(0)	(0)	(0)	(20)	(0)	(0)	(0)
	inflammatory infiltration		2	8	0	0 **	0	10	0	0 **
			(20)	(80)	(0)	(0)	(0)	(100)	(0)	(0)
	respiratory metaplasia:olfactory epithelium		5	1	0	0 *	0	10	0	0 **
			(50)	(10)	(0)	(0)	(0)	(100)	(0)	(0)
	squamous cell metaplasia:respiratory epithelium		10	0	0	0 **	0	10	0	0 **
			(100)	(0)	(0)	(0)	(0)	(100)	(0)	(0)
	squamous cell metaplasia:olfactory epithelium		4	0	0	0	3	0	0	0
			(40)	(0)	(0)	(0)	(30)	(0)	(0)	(0)
	atrophy:olfactory epithelium		6	4	0	0 **	0	0	10	0 **
			(60)	(40)	(0)	(0)	(0)	(0)	(100)	(0)
	atrophy:respiratory epithelium		10	0	0	0 **	0	10	0	0 **
			(100)	(0)	(0)	(0)	(0)	(100)	(0)	(0)
	necrosis:olfactory epithelium		4	0	0	0	9	1	0	0 **
			(40)	(0)	(0)	(0)	(90)	(10)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Respiratory system]																	
nasal cavit		<10>				<10>				<10>				<10>			
	edema:lamina propria	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)
	necrosis:respiratory epithelium	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)
	hyperplasia:respiratory epithelium	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)
nasopharynx		<10>				<10>				<10>				<10>			
	inflammatory 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)	0 (0)	0 (0)	0 (0)	0 (0)
	squamous cell metaplasia	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)
	hyperplasia:epithelium	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)
larynx		<10>				<10>				<10>				<10>			
	squamous cell metaplasia	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	12 ppm 1 (%)	12 ppm 2 (%)	12 ppm 3 (%)	12 ppm 4 (%)	24 ppm 1 (%)	24 ppm 2 (%)	24 ppm 3 (%)	24 ppm 4 (%)
	Group Name	12 ppm				24 ppm			
	No. of Animals on Study	10				10			
[Respiratory system]									
nasal cavit		<10>				<10>			
	edema:lamina propria	10 (100)	0 (0)	0 (0)	0 ** (0)	0 (0)	10 (100)	0 (0)	0 ** (0)
	necrosis:respiratory epithelium	0 (0)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)
	hyperplasia:respiratory epithelium	10 (100)	0 (0)	0 (0)	0 ** (0)	0 (0)	10 (100)	0 (0)	0 ** (0)
nasopharynx		<10>				<10>			
	inflammatory infiltration	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 ** (0)
	squamous cell metaplasia	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 ** (0)
	hyperplasia:epithelium	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 ** (0)
larynx		<10>				<10>			
	squamous cell metaplasia	0 (0)	0 (0)	0 (0)	0 (0)	9 (90)	0 (0)	0 (0)	0 ** (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Respiratory system]																	
trachea		<10>				<10>				<10>				<10>			
	squamous cell metaplasia	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)
lung		<10>				<10>				<10>				<10>			
	osseous metaplasia	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Circulatory system]																	
heart		<10>				<10>				<10>				<10>			
	granulation	6 (60)	0 (0)	0 (0)	0 (0)	5 (50)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	6 (60)	0 (0)	0 (0)	0 (0)
[Digestive system]																	
liver		<10>				<10>				<10>				<10>			
	herniation	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)
[Urinary system]																	
kidney		<10>				<10>				<10>				<10>			
	basophilic change	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				10			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]										
trachea			<10>				<10>			
	squamous cell metaplasia		0	0	0	0	9	0	0	0 **
			(0)	(0)	(0)	(0)	(90)	(0)	(0)	(0)
lung			<10>				<10>			
	osseous metaplasia		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Circulatory system]										
heart			<10>				<10>			
	granulation		4	0	0	0	3	0	0	0
			(40)	(0)	(0)	(0)	(30)	(0)	(0)	(0)
[Digestive system]										
liver			<10>				<10>			
	herniation		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Urinary system]										
kidney			<10>				<10>			
	basophilic change		3	0	0	0	2	0	0	0
			(30)	(0)	(0)	(0)	(20)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Urinary system]																	
kidney		<10>				<10>				<10>				<10>			
	eosinophilic body	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0)
[Reproductive system]																	
prostate		<10>				<10>				<10>				<10>			
	inflammatory 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)	0 (0)	0 (0)	0 (0)	0 (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				10			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Urinary system]										
kidney			<10>				<10>			
	eosinophilic body		10	0	0	0	10	0	0	0
			(100)	(0)	(0)	(0)	(100)	(0)	(0)	(0)
[Reproductive system]										
prostate			<10>				<10>			
	inflammatory infiltration		1	0	0	0	0	0	0	0
			(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

APPENDIX B 10-2

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN-WEEK STUDY: SUMMARY)

RAT : FEMALE : SACRIFICED ANIMALS

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Respiratory system]																	
nasal cavit		<10>				<10>				<10>				<10>			
	adhesion	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)
	inflammatory infiltration	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)
	eosinophilic change:olfactory epithelium	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)
	respiratory metaplasia:olfactory epithelium	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)
	squamous cell metaplasia:respiratory epithelium	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)
	squamous cell metaplasia:olfactory epithelium	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)
	atrophy:olfactory epithelium	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)
	atrophy:respiratory epithelium	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	12 ppm 1 (%)	12 ppm 2 (%)	12 ppm 3 (%)	12 ppm 4 (%)	24 ppm 1 (%)	24 ppm 2 (%)	24 ppm 3 (%)	24 ppm 4 (%)
	Group Name	12 ppm				24 ppm			
	No. of Animals on Study	10				10			
[Respiratory system]									
nasal cavit		<10>				<10>			
	adhesion	0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
	inflammatory infiltration	10 (100)	0 (0)	0 (0)	0 ** (0)	0 (0)	10 (100)	0 (0)	0 ** (0)
	eosinophilic change:olfactory epithelium	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium	2 (20)	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 ** (0)
	squamous cell metaplasia:respiratory epithelium	10 (100)	0 (0)	0 (0)	0 ** (0)	0 (0)	10 (100)	0 (0)	0 ** (0)
	squamous cell metaplasia:olfactory epithelium	5 (50)	0 (0)	0 (0)	0 * (0)	1 (10)	0 (0)	0 (0)	0 (0)
	atrophy:olfactory epithelium	10 (100)	0 (0)	0 (0)	0 ** (0)	0 (0)	5 (50)	5 (50)	0 ** (0)
	atrophy:respiratory epithelium	10 (100)	0 (0)	0 (0)	0 ** (0)	0 (0)	10 (100)	0 (0)	0 ** (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

STUDY NO. : 0292
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

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

Organ	Findings / Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
	Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																	
nasal cavit		<10>				<10>				<10>				<10>			
	necrosis:olfactory epithelium	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)
	edema:lamina propria	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)
	necrosis:respiratory epithelium	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)
	hyperplasia:respiratory epithelium	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)
nasopharynx		<10>				<10>				<10>				<10>			
	squamous cell metaplasia	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)
	hyperplasia:epithelium	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)
larynx		<10>				<10>				<10>				<10>			
	squamous cell metaplasia	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	12 ppm 1 (%)	12 ppm 2 (%)	12 ppm 3 (%)	12 ppm 4 (%)	24 ppm 1 (%)	24 ppm 2 (%)	24 ppm 3 (%)	24 ppm 4 (%)
	Group Name	12 ppm				24 ppm			
	No. of Animals on Study	10				10			
[Respiratory system]									
nasal cavit		<10>				<10>			
	necrosis:olfactory epithelium	2 (20)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0) **
	edema:lamina propria	9 (90)	0 (0)	0 (0)	0 (0) **	1 (10)	9 (90)	0 (0)	0 (0) **
	necrosis:respiratory epithelium	0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
	hyperplasia:respiratory epithelium	10 (100)	0 (0)	0 (0)	0 (0) **	0 (0)	10 (100)	0 (0)	0 (0) **
nasopharynx		<10>				<10>			
	squamous cell metaplasia	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0) **
	hyperplasia:epithelium	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0) **
larynx		<10>				<10>			
	squamous cell metaplasia	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0) **

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Respiratory system]																	
trachea		<10>				<10>				<10>				<10>			
	squamous cell metaplasia	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]																	
bone marrow		<10>				<10>				<10>				<10>			
	granulation	1 (10)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)
[Circulatory system]																	
heart		<10>				<10>				<10>				<10>			
	granulation	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Digestive system]																	
liver		<10>				<10>				<10>				<10>			
	herniation	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				10			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]										
trachea			<10>				<10>			
	squamous cell metaplasia		0	0	0	0	3	0	0	0
			(0)	(0)	(0)	(0)	(30)	(0)	(0)	(0)
[Hematopoietic system]										
bone marrow			<10>				<10>			
	granulation		1	0	0	0	0	0	0	0
			(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Circulatory system]										
heart			<10>				<10>			
	granulation		1	0	0	0	0	0	0	0
			(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Digestive system]										
liver			<10>				<10>			
	herniation		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Digestive system]																	
liver		<10>				<10>				<10>				<10>			
	granulation	1 (10)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
[Urinary system]																	
kidney		<10>				<10>				<10>				<10>			
	eosinophilic body	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization:cortico-medullary junction	9 (90)	0 (0)	0 (0)	0 (0)	5 (50)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 * (0)	4 (40)	0 (0)	0 (0)	0 (0)
	mineralization:papilla	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																	
Harder gl		<10>				<10>				<10>				<10>			
	lymphocytic infiltration	3 (30)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				10			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Digestive system]										
liver			<10>				<10>			
	granulation		2	0	0	0	1	0	0	0
			(20)	(0)	(0)	(0)	(10)	(0)	(0)	(0)
[Urinary system]										
kidney			<10>				<10>			
	eosinophilic body		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	mineralization:cortico-medullary junction		6	0	0	0	2	0	0	0 **
			(60)	(0)	(0)	(0)	(20)	(0)	(0)	(0)
	mineralization:papilla		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Special sense organs/appandage]										
Harder gl			<10>				<10>			
	lymphocytic infiltration		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

APPENDIX B 10-3

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE : MALE : SACRIFICED ANIMALS

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings / Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	9				10				9				10			
	Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																	
nasal cavit		< 9>				<10>				< 9>				<10>			
	exudate	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)
	inflammatory 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)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	eosinophilic change:olfactory epithelium	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)
	eosinophilic change:respiratory epithelium	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)
	respiratory metaplasia:olfactory epithelium	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)
	squamous cell metaplasia:respiratory epithelium	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)
	atrophy:olfactory epithelium	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)
	atrophy:respiratory epithelium	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	12 ppm 1 (%)	12 ppm 2 (%)	12 ppm 3 (%)	12 ppm 4 (%)	24 ppm 1 (%)	24 ppm 2 (%)	24 ppm 3 (%)	24 ppm 4 (%)
	Group Name	12 ppm				24 ppm			
	No. of Animals on Study	10				10			
[Respiratory system]									
nasal cavit		<10>				<10>			
	exudate	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0) **
	inflammatory infiltration	6 (60)	0 (0)	0 (0)	0 (0) *	0 (0)	10 (100)	0 (0)	0 (0) **
	eosinophilic change:olfactory epithelium	3 (30)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium	3 (30)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium	2 (20)	0 (0)	0 (0)	0 (0)	10 (100)	0 (0)	0 (0)	0 (0) **
	squamous cell metaplasia:respiratory epithelium	9 (90)	1 (10)	0 (0)	0 (0) **	8 (80)	2 (20)	0 (0)	0 (0) **
	atrophy:olfactory epithelium	2 (20)	3 (30)	0 (0)	0 (0) *	0 (0)	5 (50)	5 (50)	0 (0) **
	atrophy:respiratory epithelium	1 (10)	9 (90)	0 (0)	0 (0) **	0 (0)	10 (100)	0 (0)	0 (0) **

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1	Control 2	Control 3	Control 4	1.5 ppm 1	1.5 ppm 2	1.5 ppm 3	1.5 ppm 4	3 ppm 1	3 ppm 2	3 ppm 3	3 ppm 4	6 ppm 1	6 ppm 2	6 ppm 3	6 ppm 4
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	9				10				9				10			
	Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																	
nasal cavit		< 9>				<10>				< 9>				<10>			
	necrosis:olfactory epithelium	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)
	edema:lamina propria	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)
	necrosis:respiratory epithelium	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)
nasopharynx		< 9>				<10>				< 9>				<10>			
	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)
	squamous cell metaplasia	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)
larynx		< 9>				<10>				< 9>				<10>			
	squamous cell metaplasia	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)
trachea		< 9>				<10>				< 9>				<10>			
	squamous cell metaplasia	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				10			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]										
nasal cavit			<10>				<10>			
	necrosis:olfactory epithelium		1	0	0	0	4	0	0	0
			(10)	(0)	(0)	(0)	(40)	(0)	(0)	(0)
	edema:lamina propria		3	0	0	0	8	0	0	0 **
			(30)	(0)	(0)	(0)	(80)	(0)	(0)	(0)
	necrosis:respiratory epithelium		2	0	0	0	0	10	0	0 **
			(20)	(0)	(0)	(0)	(0)	(100)	(0)	(0)
nasopharynx			<10>				<10>			
	atrophy		0	0	0	0	6	0	0	0 *
			(0)	(0)	(0)	(0)	(60)	(0)	(0)	(0)
	squamous cell metaplasia		0	0	0	0	9	0	0	0 **
			(0)	(0)	(0)	(0)	(90)	(0)	(0)	(0)
larynx			<10>				<10>			
	squamous cell metaplasia		3	0	0	0	10	0	0	0 **
			(30)	(0)	(0)	(0)	(100)	(0)	(0)	(0)
trachea			<10>				<10>			
	squamous cell metaplasia		0	0	0	0	10	0	0	0 **
			(0)	(0)	(0)	(0)	(100)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	9				10				9				10			
[Hematopoietic system]																	
spleen		< 9>				<10>				< 9>				<10>			
	deposit of melanin	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Circulatory system]																	
heart		< 9>				<10>				< 9>				<10>			
	granulation	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)
[Digestive system]																	
liver		< 9>				<10>				< 9>				<10>			
	necrosis:focal	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
	granulation	3 (33)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	3 (33)	0 (0)	0 (0)	0 (0)	3 (30)	0 (0)	0 (0)	0 (0)
[Urinary system]																	
kidney		< 9>				<10>				< 9>				<10>			
	hydronephrosis	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	12 ppm 1 (%)	12 ppm 2 (%)	12 ppm 3 (%)	12 ppm 4 (%)	24 ppm 1 (%)	24 ppm 2 (%)	24 ppm 3 (%)	24 ppm 4 (%)
	Group Name	12 ppm				24 ppm			
	No. of Animals on Study	10				10			
[Hematopoietic system]									
spleen		<10>				<10>			
	deposit of melanin	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Circulatory system]									
heart		<10>				<10>			
	granulation	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]									
liver		<10>				<10>			
	necrosis:focal	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Urinary system]									
kidney		<10>				<10>			
	hydronephrosis	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control				1.5 ppm				3 ppm				6 ppm			
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	9				10				9				10			
	Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Endocrine system]																	
thyroid		< 9>				<10>				< 9>				<10>			
	Lymphocytic infiltration	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		(11)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Nervous system]																	
spinal cord		< 9>				<10>				< 9>				<10>			
	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)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				10			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Endocrine system]										
thyroid			<10>				<10>			
	lymphocytic infiltration		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Nervous system]										
spinal cord			<10>				<10>			
	cyst		1	0	0	0	0	0	0	0
			(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

APENDIX B 10-4

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE : FEMALE : SACRIFICED ANIMALS

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Respiratory system]																	
nasal cavit		<10>				<10>				<10>				<10>			
	exudate	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)
	inflammatory 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)	0 (0)	0 (0)	0 (0)	0 (0)
	eosinophilic change:olfactory epithelium	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)
	eosinophilic change:respiratory epithelium	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium	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)
	squamous cell metaplasia:respiratory epithelium	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)
	atrophy:olfactory epithelium	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)
	atrophy:respiratory epithelium	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				9			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]										
nasal cavit			<10>				< 9>			
	exudate		0	0	0	0	0	8	0	0 **
			(0)	(0)	(0)	(0)	(0)	(89)	(0)	(0)
	inflammatory infiltration		6	0	0	0 *	1	8	0	0 **
			(60)	(0)	(0)	(0)	(11)	(89)	(0)	(0)
	eosinophilic change:olfactory epithelium		0	0	0	0	8	0	0	0 **
			(0)	(0)	(0)	(0)	(89)	(0)	(0)	(0)
	eosinophilic change:respiratory epithelium		0	0	0	0	8	0	0	0 **
			(0)	(0)	(0)	(0)	(89)	(0)	(0)	(0)
	respiratory metaplasia:olfactory epithelium		0	0	0	0	9	0	0	0 **
			(0)	(0)	(0)	(0)	(100)	(0)	(0)	(0)
	squamous cell metaplasia:respiratory epithelium		9	1	0	0 **	3	6	0	0 **
			(90)	(10)	(0)	(0)	(33)	(67)	(0)	(0)
	atrophy:olfactory epithelium		3	0	0	0	1	5	3	0 **
			(30)	(0)	(0)	(0)	(11)	(56)	(33)	(0)
	atrophy:respiratory epithelium		1	9	0	0 **	1	8	0	0 **
			(10)	(90)	(0)	(0)	(11)	(89)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference : * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Respiratory system]																	
nasal cavit		<10>				<10>				<10>				<10>			
	necrosis:olfactory epithelium	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)
	edema:lamina propria	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)
	necrosis:respiratory epithelium	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)
nasopharynx		<10>				<10>				<10>				<10>			
	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)
	squamous cell metaplasia	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)
larynx		<10>				<10>				<10>				<10>			
	squamous cell metaplasia	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)
trachea		<10>				<10>				<10>				<10>			
	squamous cell metaplasia	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	12 ppm 1 (%)	12 ppm 2 (%)	12 ppm 3 (%)	12 ppm 4 (%)	24 ppm 1 (%)	24 ppm 2 (%)	24 ppm 3 (%)	24 ppm 4 (%)
	Group Name	12 ppm				24 ppm			
	No. of Animals on Study	10				9			
[Respiratory system]									
nasal cavit		<10>				< 9>			
	necrosis:olfactory epithelium	0 (0)	0 (0)	0 (0)	0 (0)	2 (22)	0 (0)	0 (0)	0 (0)
	edema:lamina propria	0 (0)	0 (0)	0 (0)	0 (0)	9 (100)	0 (0)	0 (0)	0 ** (0)
	necrosis:respiratory epithelium	3 (30)	0 (0)	0 (0)	0 (0)	0 (0)	9 (100)	0 (0)	0 ** (0)
nasopharynx		<10>				< 9>			
	atrophy	0 (0)	0 (0)	0 (0)	0 (0)	3 (33)	0 (0)	0 (0)	0 (0)
	squamous cell metaplasia	0 (0)	0 (0)	0 (0)	0 (0)	1 (11)	0 (0)	0 (0)	0 (0)
larynx		< 9>				< 8>			
	squamous cell metaplasia	2 (22)	0 (0)	0 (0)	0 (0)	8 (100)	0 (0)	0 (0)	0 ** (0)
trachea		<10>				< 9>			
	squamous cell metaplasia	0 (0)	0 (0)	0 (0)	0 (0)	3 (33)	0 (0)	0 (0)	0 (0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Control 1 (%)	Control 2 (%)	Control 3 (%)	Control 4 (%)	1.5 ppm 1 (%)	1.5 ppm 2 (%)	1.5 ppm 3 (%)	1.5 ppm 4 (%)	3 ppm 1 (%)	3 ppm 2 (%)	3 ppm 3 (%)	3 ppm 4 (%)	6 ppm 1 (%)	6 ppm 2 (%)	6 ppm 3 (%)	6 ppm 4 (%)
	Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	10				10				10				10			
[Hematopoietic system]																	
spleen		<10>				<10>				<10>				<10>			
	deposit of melanin	0 (0)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																	
liver		<10>				<10>				<10>				<10>			
	granulation	4 (40)	0 (0)	0 (0)	0 (0)	4 (40)	0 (0)	0 (0)	0 (0)	2 (20)	0 (0)	0 (0)	0 (0)	1 (10)	0 (0)	0 (0)	0 (0)
[Endocrine system]																	
thyroid		<10>				<10>				<10>				<10>			
	lymphocytic infiltration	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)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	10				9			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]										
spleen			<10>				< 9>			
	deposit of melanin		0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(11)	(0)	(0)	(0)
[Digestive system]										
liver			<10>				< 9>			
	granulation		1	0	0	0	1	0	0	0
			(10)	(0)	(0)	(0)	(11)	(0)	(0)	(0)
[Endocrine system]										
thyroid			<10>				< 9>			
	lymphocytic infiltration		0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

APPENDIX B 10-5

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS

(THIRTEEN-WEEK STUDY: SUMMARY)

MOUSE: MALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0293
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings / Group Name	Control				1.5 ppm				3 ppm				6 ppm			
	No. of Animals on Study	1				0				1				0			
	Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]																	
thymus		< 1>				< 0>				< 1>				< 0>			
	atrophy	0	0	0	0	-	-	-	-	1	0	0	0	-	-	-	-
		(0)	(0)	(0)	(0)	(-)	(-)	(-)	(-)	(100)	(0)	(0)	(0)	(-)	(-)	(-)	(-)
[Urinary system]																	
kidney		< 1>				< 0>				< 1>				< 0>			
	hydronephrosis	0	0	1	0	-	-	-	-	0	0	1	0	-	-	-	-
		(0)	(0)	(100)	(0)	(-)	(-)	(-)	(-)	(0)	(0)	(100)	(0)	(-)	(-)	(-)	(-)
[Nervous system]																	
brain		< 1>				< 0>				< 1>				< 0>			
	hemorrhage	0	0	0	0	-	-	-	-	1	0	0	0	-	-	-	-
		(0)	(0)	(0)	(0)	(-)	(-)	(-)	(-)	(100)	(0)	(0)	(0)	(-)	(-)	(-)	(-)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100

Organ	Findings	Group Name	12 ppm				24 ppm			
		No. of Animals on Study	0				0			
		Grade	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]										
thymus			< 0>				< 0>			
	atrophy		-	-	-	-	-	-	-	-
			(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
[Urinary system]										
kidney			< 0>				< 0>			
	hydronephrosis		-	-	-	-	-	-	-	-
			(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
[Nervous system]										
brain			< 0>				< 0>			
	hemorrhage		-	-	-	-	-	-	-	-
			(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)

Grade 1 : Slight 2 : Moderate 3 : Marked 4 : Severe
< a > a : Number of animals examined at the site
b b : Number of animals with lesion
(c) c : b / a * 100

APPENDIX B 11-1

IDENTITY OF CROTONALDEHYDE

(THIRTEEN-WEEK STUDY)

IDENTITY OF CROTONALDEHYDE(THIRTEEN-WEEK STUDIES)

Lot no. SKJ4743

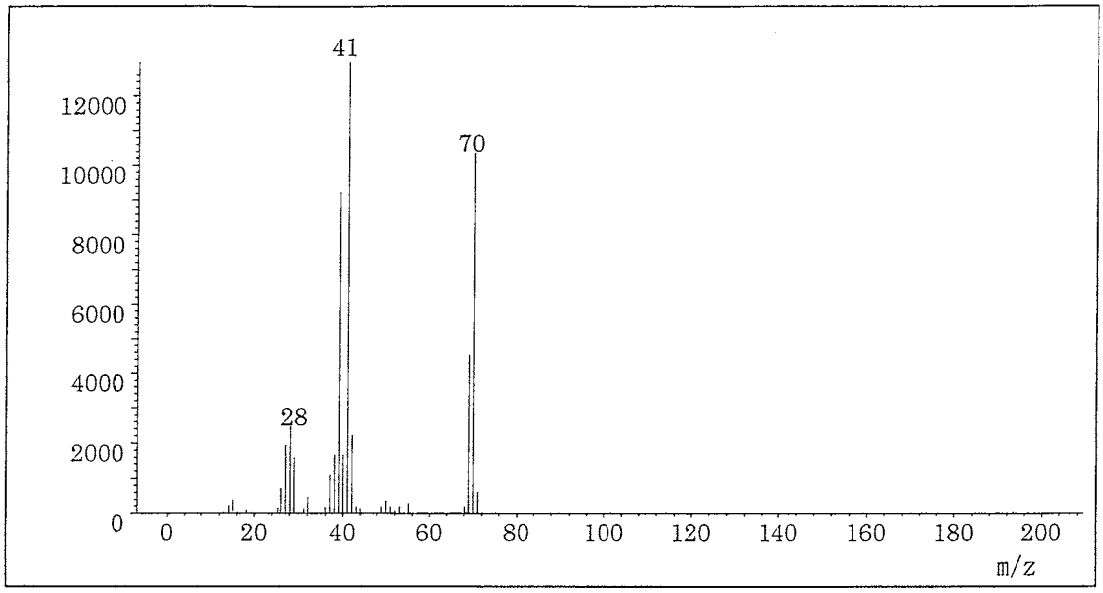
1. Spectral data

Mass Spectrometry

Instrument : HP 5989B Mass Spectrometer

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Results: The mass spectrum was consistent with literature spectrum.

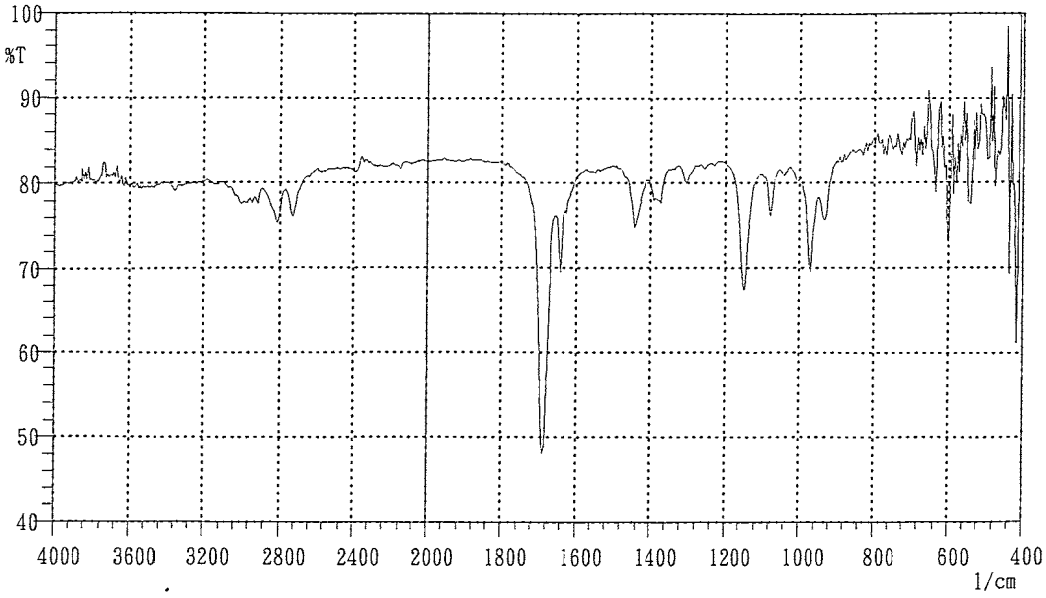
Determined Values Molecular and Fragment Peak(M/Z)	Literature Values* Molecular and Fragment Peak(M/Z)
28	28
41(Base Peak)	41(Base Peak)
70	70
	(*EPA/NIH Mass Spectral Data Base (1978) Vol. 1, p. 16.)

Infrared Spectrometry

Instrument : SIMADZU FT-IR 8200PC Infrared Spectrometer

Cell : KBr

Resolution : 2nm



Infrared Spectrum of Test Substance

Results: The infrared spectrum was consistent with literature spectrum.

Determined Values Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
910～ 950	910～ 950
950～1000	950～1000
1050～1100	1050～1100
1100～1200	1100～1200
1270～1330	1270～1330
1360～1410	1360～1410
1410～1460	1410～1460
1620～1660	1620～1660
1660～1730	1660～1730
2690～2770	2690～2770
2770～2880	2770～2880
2880～3100	2880～3100

(*Performed by the WAKO PURE CHEMICAL INDUSTRIES, LTD.)

2. Conclusions: The result of the mass spectrum and the infrared spectrum agreed with the literature values.
Consequently, the test substance was identified as Crotonaldehyde.

APPENDIX B 11-2

STABILITY OF CROTONALDEHYDE

(THIRTEEN-WEEK STUDY)

STABILITY OF CROTONALDEHYDE(THIRTEEN-WEEK STUDIES)

Lot no. SKJ4743

1. Sample storage: This lot was used from 1995. 9. 5 to 1995. 12. 14. Test substance was stored at room temperature.

2. Gas Chromatography

Instrument: Hewlett Packard 5890A Gas Chromatograph

Column: FALM(2mm ϕ × 2m)

Column Temperature: 60°C～150°C step 10°C/min.

Flow Rate: 25 ml/min

Detector: FID(Flame Ionization Detector)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No. 1) and two impurities(peak No. 2, 3 < 0. 2% of total area) analyzed at 1995. 9. 4 and one major peak(peak No. 1) and two impurities(peak No. 2, 3 < 0. 2% of total area) analyzed at 1995. 12. 15. It was identified only by comparing its gas chromatograph with that of the Crotonic Acid(peak No. 3) in the Crotonaldehyde, the amount in the test substance was 0. 10% at 1995. 9. 4. No new trace impurity peak in the test substance analyzed at 1995. 12. 15 was detected.

Date	Peak No.	Retention Time(min)	Area Count
1995. 09. 04	1	2. 244	9660000
(date analyzed)	2	5. 183	11700
	3	8. 128	5970
1995. 12. 15	1	2. 247	9780000
(date analyzed)	2	5. 182	11700
	3	8. 124	6560

3. Conclusions: The results indicated that the test substance did not change when stored in the dark at room temperature during this period(for about 3 months).

APPENDIX B 12-1

CONCENTRATION OF CROTONALDEHYDE IN INHALATION CHAMBER

(THIRTEEN-WEEK STUDIES)

CONCENTRATION OF CROTONALDEHYDE
IN INHALTION CHAMBER
(RAT : THIRTEEN-WEEK STUDY)

Group Name	Concentration (ppm) Mean ± S.D.
Control	0.0 ± 0.0
1.5ppm	1.5 ± 0.0
3.0ppm	3.0 ± 0.0
6.0ppm	6.0 ± 0.1
12.0ppm	12.3 ± 0.3
24.0ppm	24.2 ± 0.3

CONCENTRATION OF CROTONALDEHYDE
IN INHALTION CHAMBER
(MOUSE : THIRTEEN-WEEK STUDY)

Group Name	Concentration (ppm) Mean ± S.D.
Control	0.0 ± 0.0
1.5ppm	1.5 ± 0.0
3.0ppm	3.1 ± 0.0
6.0ppm	6.2 ± 0.1
12.0ppm	12.4 ± 0.1
24.0ppm	24.7 ± 0.3

APPENDIX B 12-2

ENVIRONMENT OF INHALATION CHAMBER

(THIRTEEN-WEEK STUDIES)

ENVIRONMENT OF IN INHALTION 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	22.7 ± 0.1	57.3 ± 0.7	213.5 ± 0.7	12.1
1.5ppm	22.7 ± 0.1	59.5 ± 1.0	212.7 ± 0.8	12.0
3.0ppm	22.3 ± 0.1	58.7 ± 0.8	212.8 ± 0.5	12.0
6.0ppm	22.3 ± 0.2	58.4 ± 0.8	212.0 ± 1.0	12.0
12.0ppm	22.2 ± 0.1	58.4 ± 0.8	211.5 ± 0.9	12.0
24.0ppm	22.6 ± 0.1	59.4 ± 0.9	212.3 ± 0.9	12.0

ENVIRONMENT OF IN INHALTION 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	22.0 ± 0.1	54.8 ± 1.2	104.5 ± 0.3	12.1
1.5ppm	22.0 ± 0.1	54.7 ± 2.0	104.3 ± 0.5	12.0
3.0ppm	21.4 ± 0.3	53.8 ± 2.1	104.8 ± 0.4	12.1
6.0ppm	21.7 ± 0.1	54.7 ± 1.3	104.2 ± 0.4	12.0
12.0ppm	21.9 ± 0.1	53.7 ± 1.4	104.3 ± 0.3	12.0
24.0ppm	21.8 ± 0.2	53.2 ± 0.9	104.1 ± 0.4	12.0

APPENDIX C 1

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

METHODS FOR HEMATOLOGY,BIOCHEMISTRY AND URINALYSIS

Item	Method
Hematology	
Red blood cell (RBC)	Light scattering method [1]
Hemoglobin (Hgb)	Cyanmethemoglobin method [1]
Hematocrit (Hct)	Calculated as RBC × MCV/10 [1]
Mean corpuscular volume (MCV)	Light scattering method [1]
Mean corpuscular hemoglobin (MCH)	Calculated as Hgb/RBC × 10 [1]
Mean corpuscular hemoglobin concentration (MCHC)	Calculated as Hgb/Hct × 100 [1]
Platelet	Light scattering method [1]
Reticulocyte	Pattern recognition method [3] (New methyleneblue staining)
Prothrombin time	Quick one stage method [2]
Activated partial thromboplastin time (APTT)	Ellagic acid activated method [2]
White blood cell (WBC)	Light scattering method [1]
Differential WBC	Pattern recognition method [3] (May-Grunwald-Giemsa staining)
Biochemistry	
Total protein (TP)	Biuret method [4]
Albumin (Alb)	BCG method [4]
A/G ratio	Calculated as Alb/(TP-Alb) [4]
T-bilirubin	Alkaline azobilirubin method [4]
Glucose	Enzymatic method (GLK·G-6-PDH) [4]
T-cholesterol	Enzymatic method (CE·COD·POD) [4]
Triglyceride	Enzymatic method (LPL·GK·GPO·POD) [4]
Phospholipid	Enzymatic method (PLD·COD·POD) [4]
Glutamic oxaloacetic transaminase (GOT)	UV·Rate method [4]
Glutamic pyruvic transaminase (GPT)	UV·Rate method [4]
Lactate dehydrogenase (LDH)	UV·Rate method [4]
Alkaline phosphatase (ALP)	p-Nitrophenylphosphate method [4]
γ-Glutamyl transpeptidase (γ-GTP)	L-γ-Glutamyl-p-nitroanilide method [4]
Creatine phosphokinase (CPK)	UV·Rate method [4]
Urea nitrogen	Enzymatic method (Urease·GLDH) [4]
Creatinine	Jaffe method [4]
Sodium	Ion selective electrode method [4]
Potassium	Ion selective electrode method [4]
Chloride	Ion selective electrode method [4]
Calcium	OCPC method [4]
Inorganic phosphorus	Enzymatic method (PNP·XOD·POD) [4]
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 coagulometer (Sysmex CA-5000 : Toa Medical Electronics Co.,Ltd.,Japan)
3) Automatic blood cell differential analyzer (Hitachi 8200 : Hitachi,Ltd.,Japan)
4) Automatic analyzer (Hitachi 7070 : Hitachi,Ltd.,Japan)
5) Ames reagent strips for urinalysis (Multistix,Uro-Labstix : Bayer-Sankyo Co.,Ltd.,Japan)

APPENDIX C 2

UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

Item	Unit	Decimal place
Hematology		
Red blood cell (RBC)	$\times 10^6 / \mu L$	2
Hemoglobin	g/dL	1
Hematocrit	%	1
Mean corpuscular volume (MCV)	fL	1
Mean corpuscular hemoglobin (MCH)	pg	1
Mean corpuscular hemoglobin concentration (MCHC)	g/dL	1
Reticulocyte	‰	0
Prothrombin time	sec	1
Activated partial thromboplastin time (APTT)	sec	1
Platelet	$\times 10^3 / \mu L$	0
White blood cell (WBC)	$\times 10^3 / \mu L$	2
Differential WBC	%	0
Biochemistry		
Total protein	g/dL	1
Albumin	g/dL	1
A/G ratio	–	1
T-bilirubin	mg/dL	2
Glucose	mg/dL	0
T-cholesterol	mg/dL	0
Triglyceride	mg/dL	0
Phospholipid	mg/dL	0
Glutamic oxaloacetic transminase (GOT)	IU/L	0
Glutamic pyruvic transaminase (GPT)	IU/L	0
Lactate dehydrogenase (LDH)	IU/L	0
ALkaline phosphatase (ALP)	IU/L	0
γ-Glutamyl transpeptidase (γ-GTP)	IU/L	0
Creatine phosphokinase (CPK)	IU/L	0
Urea nitrogen	mg/dL	1
Creatinine	mg/dL	1
Sodium	mEq/L	0
Potassium	mEq/L	1
Chloride	mEq/L	0
Calcium	mg/dL	1
Inorganic phosphorus	mg/dL	1