1,3,5,7-テトラアザトリシクロ〔3.3.1.1 ^{3,7}〕デカンの
ラット及びマウスを用いた経口投与による
がん原性試験（混水試験）報告書

APPENDIXES

(E1～K4)

APPENDIXES (CONTINUED)

APPENDIXES (CONTINUED)

APPENDIX E 1

CHEMICAL INTAKE CHANGES (TOW-YEAR STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.934± 0.100	0.849± 0.107	0.763± 0.037	0.737± 0.058	0.720± 0.134	0.649± 0.076	0.600± 0.043
15000 ppm	2.002± 0.269	1.809± 0.429	1.626± 0.111	1.532± 0.136	1.436± 0.125	1.359± 0.109	1.275± 0.152
30000 ppm	3.835± 0.365	3.253± 0.315	3.006± 0.247	2.883± 0.242	2.697± 0.206	2.539± 0.195	2.348± 0.173

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13	14
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.593± 0.054	0.572± 0.041	0.541± 0.061	0.516± 0.046	0.484± 0.035	0.492± 0.037	0.479± 0.025
15000 ppm	1.233± 0.114	1.191± 0.167	1.116± 0.109	1.061± 0.081	0.998± 0.089	1.009± 0.075	1.016± 0.079
30000 ppm	2.298± 0.208	2.244± 0.181	2.198± 0.231	2.133± 0.256	2.069± 0.268	2.041± 0.165	1.995± 0.130

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 16	18	20	22	24	26	28
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.413± 0.023	0.401± 0.025	0.407± 0.044	0.389± 0.037	0.375± 0.024	0.369± 0.018	0.369± 0.032
15000 ppm	0.859± 0.048	0.839± 0.100	0.859± 0.128	0.791± 0.062	0.803± 0.179	0.793± 0.072	0.757± 0.041
30000 ppm	1.769± 0.130	1.732± 0.121	1.692± 0.105	1.622± 0.094	1.620± 0.132	1.625± 0.092	1.593± 0.082

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 30	32	34	36	38	40	42
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.356± 0.018	0.344± 0.017	0.322± 0.018	0.331± 0.016	0.328± 0.013	0.329± 0.021	0.328± 0.016
15000 ppm	0.741± 0.052	0.702± 0.079	0.672± 0.098	0.706± 0.103	0.681± 0.080	0.684± 0.065	0.687± 0.060
30000 ppm	1.536± 0.086	1.495± 0.082	1.383± 0.082	1.454± 0.111	1.421± 0.082	1.437± 0.076	1.434± 0.076

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 44	46	48	50	52	54	56
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.331± 0.016	0.332± 0.015	0.334± 0.014	0.335± 0.018	0.331± 0.039	0.326± 0.016	0.324± 0.017
15000 ppm	0.710± 0.089	0.703± 0.117	0.731± 0.122	0.705± 0.072	0.690± 0.082	0.704± 0.079	0.687± 0.099
30000 ppm	1.491± 0.108	1.456± 0.083	1.514± 0.085	1.489± 0.102	1.471± 0.100	1.517± 0.084	1.468± 0.102

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 58	60	62	64	66	68	70
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.325± 0.019	0.316± 0.018	0.311± 0.021	0.315± 0.026	0.317± 0.020	0.304± 0.026	0.312± 0.022
15000 ppm	0.695± 0.103	0.665± 0.081	0.675± 0.124	0.681± 0.175	0.680± 0.094	0.637± 0.068	0.666± 0.066
30000 ppm	1.465± 0.098	1.431± 0.124	1.454± 0.148	1.439± 0.110	1.434± 0.113	1.380± 0.111	1.442± 0.117

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 72	74	76	78	80	82	84
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.300± 0.027	0.323± 0.043	0.320± 0.049	0.351± 0.056	0.324± 0.055	0.339± 0.048	0.340± 0.048
15000 ppm	0.651± 0.078	0.687± 0.117	0.694± 0.091	0.722± 0.084	0.685± 0.096	0.727± 0.107	0.736± 0.121
30000 ppm	1.404± 0.141	1.469± 0.144	1.447± 0.172	1.585± 0.197	1.486± 0.178	1.561± 0.179	1.603± 0.310

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 86	88	90	92	94	96	98
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.356± 0.057	0.364± 0.055	0.358± 0.055	0.388± 0.093	0.370± 0.071	0.387± 0.075	0.419± 0.116
15000 ppm	0.771± 0.149	0.756± 0.094	0.765± 0.140	0.780± 0.151	0.798± 0.164	0.874± 0.201	0.944± 0.278
30000 ppm	1.599± 0.205	1.606± 0.196	1.603± 0.227	1.703± 0.287	1.704± 0.306	1.878± 0.322	1.789± 0.609

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 100	102	104
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.429± 0.091	0.447± 0.131	0.450± 0.092
15000 ppm	0.908± 0.264	0.994± 0.334	0.924± 0.192
30000 ppm	1.831± 0.476	1.952± 0.463	1.947± 0.509

APPENDIX E 2

CHEMICAL INTAKE CHANGES (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	1.189± 0.404	1.214± 0.565	1.066± 0.287	0.965± 0.226	0.898± 0.209	0.931± 0.304	0.976± 0.409
15000 ppm	2.175± 0.146	2.119± 0.602	2.060± 0.662	1.919± 0.344	1.860± 0.555	1.926± 0.725	1.717± 0.538
30000 ppm	4.531± 0.460	4.027± 1.246	3.656± 0.375	3.629± 0.894	3.276± 0.320	3.369± 0.808	3.170± 0.892

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13	14
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.905± 0.279	0.903± 0.285	0.915± 0.333	0.846± 0.309	0.792± 0.253	0.828± 0.282	0.825± 0.210
15000 ppm	1.749± 0.572	1.708± 0.473	1.584± 0.308	1.645± 0.466	1.559± 0.548	1.438± 0.267	1.679± 0.520
30000 ppm	3.282± 1.186	3.042± 0.701	3.002± 0.805	2.762± 0.614	3.104± 1.295	2.937± 0.811	3.031± 0.883

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 16	18	20	22	24	26	28
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.761± 0.249	0.722± 0.176	0.705± 0.175	0.725± 0.258	0.698± 0.181	0.723± 0.255	0.645± 0.168
15000 ppm	1.545± 0.557	1.533± 0.417	1.477± 0.402	1.381± 0.366	1.445± 0.436	1.414± 0.414	1.319± 0.373
30000 ppm	2.594± 0.547	2.634± 0.428	2.656± 0.531	2.580± 0.739	2.690± 0.791	2.699± 0.738	2.530± 0.615

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 30	32	34	36	38	40	42
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.655± 0.189	0.616± 0.191	0.546± 0.153	0.674± 0.296	0.582± 0.172	0.594± 0.186	0.617± 0.239
15000 ppm	1.249± 0.310	1.375± 0.550	1.123± 0.320	1.247± 0.384	1.267± 0.451	1.195± 0.398	1.194± 0.320
30000 ppm	2.379± 0.523	2.613± 0.789	2.161± 0.309	2.399± 0.612	2.317± 0.635	2.302± 0.567	2.343± 0.686

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 44	46	48	50	52	54	56
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.573± 0.164	0.551± 0.136	0.562± 0.113	0.593± 0.199	0.586± 0.194	0.542± 0.142	0.531± 0.161
15000 ppm	1.154± 0.240	1.167± 0.270	1.221± 0.363	1.231± 0.407	1.163± 0.323	1.056± 0.162	1.124± 0.321
30000 ppm	2.507± 0.803	2.457± 0.508	2.419± 0.542	2.447± 0.535	2.504± 0.755	2.385± 0.353	2.437± 0.637

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 58	60	62	64	66	68	70
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.552± 0.134	0.508± 0.108	0.536± 0.160	0.511± 0.149	0.507± 0.179	0.457± 0.128	0.440± 0.123
15000 ppm	1.154± 0.299	1.118± 0.314	1.046± 0.209	1.021± 0.284	0.984± 0.209	0.947± 0.226	0.934± 0.208
30000 ppm	2.309± 0.414	2.360± 0.649	2.251± 0.709	2.202± 0.431	2.297± 0.669	2.112± 0.382	2.143± 0.456

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 72	74	76	78	80	82	84
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.447± 0.110	0.465± 0.106	0.448± 0.096	0.458± 0.092	0.449± 0.124	0.483± 0.141	0.470± 0.135
15000 ppm	0.972± 0.373	0.965± 0.289	0.982± 0.250	1.031± 0.250	0.960± 0.315	1.035± 0.311	0.954± 0.205
30000 ppm	2.191± 0.619	2.203± 0.597	2.146± 0.454	2.167± 0.635	2.165± 0.686	2.217± 0.363	2.343± 0.746

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 86	88	90	92	94	96	98
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.478± 0.093	0.470± 0.108	0.456± 0.103	0.484± 0.126	0.450± 0.104	0.502± 0.114	0.484± 0.130
15000 ppm	0.989± 0.188	0.982± 0.213	0.958± 0.179	1.025± 0.211	0.976± 0.227	1.024± 0.259	1.023± 0.230
30000 ppm	2.251± 0.526	2.289± 0.462	2.224± 0.430	2.344± 0.649	2.282± 0.537	2.466± 0.722	2.477± 0.853

STUDY NO. : 0224
ANIMAL : RAT F344
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 100	102	104
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000
7500 ppm	0.507± 0.131	0.558± 0.185	0.557± 0.154
15000 ppm	1.070± 0.301	1.127± 0.251	1.102± 0.231
30000 ppm	2.257± 0.656	2.130± 0.516	2.380± 0.515

APPENDIX E 3

CHEMICAL INTAKE CHANGES (TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	2.235± 0.281	2.047± 0.326	1.936± 0.245	2.056± 0.346	1.900± 0.555	2.222± 0.864	2.222± 0.871
20000 ppm	4.360± 0.560	4.185± 0.502	4.047± 0.658	4.420± 0.664	4.078± 0.905	4.699± 1.322	4.829± 2.014
40000 ppm	9.635± 1.380	9.219± 1.191	8.968± 1.164	10.666± 1.720	10.688± 5.269	10.374± 3.426	11.089± 5.203

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13	14
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	2.138± 1.062	2.021± 0.395	1.812± 0.563	1.690± 0.401	1.755± 0.486	1.622± 0.601	1.552± 0.316
20000 ppm	4.696± 1.772	4.438± 1.144	3.831± 1.187	4.092± 2.270	3.543± 0.639	3.327± 1.495	3.502± 1.623
40000 ppm	10.460± 4.137	9.507± 2.928	8.374± 2.160	8.501± 3.427	8.005± 1.733	7.406± 2.348	7.420± 2.788

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 16	18	20	22	24	26	28
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	1.561± 0.633	1.291± 0.179	1.161± 0.235	1.171± 0.199	1.164± 0.480	1.120± 0.201	1.038± 0.179
20000 ppm	3.057± 1.140	2.830± 0.945	2.513± 0.617	2.492± 0.644	2.136± 0.328	2.126± 0.229	2.232± 0.835
40000 ppm	6.802± 2.157	6.215± 1.814	5.623± 1.574	5.792± 1.282	5.342± 1.824	4.776± 0.590	4.761± 0.544

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 30	32	34	36	38	40	42
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	1.011± 0.210	0.959± 0.139	0.977± 0.165	1.009± 0.168	0.905± 0.103	0.941± 0.119	0.973± 0.168
20000 ppm	2.058± 0.681	2.014± 0.534	2.094± 1.396	1.945± 0.593	1.959± 0.707	2.052± 0.559	2.025± 0.381
40000 ppm	4.427± 1.139	4.663± 0.944	4.436± 0.705	4.313± 0.568	4.117± 0.538	4.469± 0.665	4.289± 0.782

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 44	46	48	50	52	54	56
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	0.948± 0.098	0.927± 0.103	0.974± 0.108	0.951± 0.101	0.865± 0.146	0.923± 0.091	0.942± 0.114
20000 ppm	2.024± 0.582	1.930± 0.472	2.001± 0.235	1.895± 0.351	1.767± 0.313	1.911± 0.284	2.003± 0.386
40000 ppm	4.509± 1.323	4.365± 0.572	4.637± 1.104	4.324± 1.467	4.113± 1.238	4.636± 2.824	4.867± 2.800

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 58	60	62	64	66	68	70
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	0.924± 0.104	0.915± 0.148	0.890± 0.113	1.092± 1.172	0.990± 0.357	0.877± 0.096	0.847± 0.068
20000 ppm	2.008± 0.254	1.938± 0.247	1.756± 0.199	1.860± 0.258	1.899± 0.272	1.892± 0.315	1.765± 0.256
40000 ppm	4.690± 2.203	4.524± 2.520	3.948± 0.544	4.232± 0.796	4.321± 1.585	4.531± 2.443	4.320± 2.256

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 72	74	76	78	80	82	84
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	0.846± 0.059	0.869± 0.120	0.853± 0.103	0.849± 0.081	0.879± 0.106	0.868± 0.155	0.902± 0.270
20000 ppm	1.860± 0.376	1.835± 0.349	1.934± 0.541	1.871± 0.340	1.927± 0.465	1.915± 0.594	1.975± 0.783
40000 ppm	4.687± 3.404	5.002± 3.994	5.186± 4.606	4.910± 4.782	4.503± 2.194	4.679± 2.824	4.979± 3.355

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 86	88	90	92	94	96	98
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	0.964± 0.578	0.947± 0.318	0.966± 0.576	0.930± 0.135	0.895± 0.159	0.983± 0.321	0.926± 0.216
20000 ppm	2.078± 0.824	2.298± 1.061	2.766± 1.906	2.722± 1.830	2.913± 2.614	3.211± 2.992	3.027± 2.831
40000 ppm	5.394± 4.141	5.877± 5.244	6.762± 8.220	5.971± 5.382	6.749± 7.050	6.981± 7.286	8.180± 8.426

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : MALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 100	102	104
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	0.955± 0.260	1.025± 0.358	1.015± 0.187
20000 ppm	2.712± 1.199	2.577± 1.084	2.779± 1.036
40000 ppm	8.131± 8.329	8.380± 8.959	8.363± 9.097

APPENDIX E 4

CHEMICAL INTAKE CHANGES (TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 1	2	3	4	5	6	7
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	2.521± 0.204	2.537± 0.305	2.373± 0.328	2.535± 0.531	2.918± 1.318	3.308± 1.720	3.678± 2.357
20000 ppm	5.150± 0.749	5.405± 0.811	5.264± 0.706	6.740± 2.051	6.988± 4.085	7.265± 4.373	6.559± 2.966
40000 ppm	11.587± 1.192	11.502± 1.295	10.920± 1.348	14.617± 6.218	12.515± 5.566	13.930± 5.465	14.238± 5.857

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 8	9	10	11	12	13	14
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	3.856± 3.248	3.412± 1.699	3.131± 2.590	3.394± 1.902	3.321± 1.631	3.234± 2.456	3.856± 2.637
20000 ppm	6.569± 2.801	6.262± 3.137	6.330± 4.155	7.335± 6.016	6.425± 3.994	7.861± 6.765	7.595± 5.170
40000 ppm	13.957± 7.365	12.870± 7.587	11.378± 5.405	11.916± 4.065	12.008± 5.177	13.406± 11.439	13.541± 8.382

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 16	18	20	22	24	26	28
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	3.133± 1.789	2.878± 1.413	2.529± 1.149	2.547± 1.191	2.403± 1.230	2.187± 0.894	2.208± 1.065
20000 ppm	5.807± 3.009	5.879± 3.041	4.646± 1.834	4.675± 1.654	4.522± 1.313	4.748± 1.580	4.403± 1.615
40000 ppm	11.183± 3.488	11.207± 5.640	10.177± 6.637	9.126± 3.580	10.404± 6.032	8.996± 2.949	9.258± 4.361

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 30	32	34	36	38	40	42
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	2.384± 1.056	1.923± 0.681	1.854± 0.895	2.008± 0.781	1.920± 1.012	1.917± 0.941	2.186± 1.307
20000 ppm	4.188± 1.528	4.033± 1.283	4.409± 2.868	4.256± 1.940	3.955± 1.525	4.281± 2.321	4.291± 2.285
40000 ppm	8.666± 2.790	9.386± 5.476	8.296± 2.694	8.129± 4.638	7.321± 3.173	7.767± 2.457	7.306± 1.701

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 44	46	48	50	52	54	56
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	2.118± 1.262	1.969± 1.388	1.992± 1.099	1.993± 0.986	1.708± 0.763	2.271± 1.820	1.974± 1.058
20000 ppm	4.545± 2.926	4.008± 3.342	3.697± 1.097	4.123± 3.463	3.507± 1.673	3.830± 1.887	3.733± 1.147
40000 ppm	7.396± 1.640	7.385± 2.061	7.558± 1.675	7.681± 2.975	6.639± 1.383	7.005± 1.867	7.118± 1.348

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 58	60	62	64	66	68	70
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	1.724± 0.741	1.758± 0.834	1.494± 0.618	1.552± 0.742	1.484± 0.647	1.451± 0.667	1.320± 0.557
20000 ppm	3.478± 1.677	3.541± 1.983	2.957± 1.170	3.310± 1.514	3.468± 3.265	3.336± 2.253	2.914± 1.219
40000 ppm	6.273± 1.106	6.836± 2.428	5.664± 0.899	6.185± 1.470	5.676± 0.800	5.751± 0.912	5.669± 1.346

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 72	74	76	78	80	82	84
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	1.344± 0.481	1.431± 0.918	1.373± 0.723	1.157± 0.360	1.319± 0.631	1.254± 0.536	1.259± 0.518
20000 ppm	3.076± 1.399	2.889± 0.882	2.870± 1.082	2.674± 0.997	2.953± 1.338	2.675± 0.596	2.688± 0.719
40000 ppm	5.785± 1.008	5.879± 1.005	5.552± 0.895	5.382± 0.994	5.867± 1.475	5.690± 1.627	5.579± 1.048

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g/kg/day
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 86	88	90	92	94	96	98
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	1.251± 0.331	1.326± 0.370	1.250± 0.235	1.286± 0.342	1.253± 0.365	1.352± 0.413	1.271± 0.283
20000 ppm	2.762± 0.741	2.887± 0.884	2.957± 0.749	2.964± 0.742	2.915± 0.833	3.110± 0.800	3.143± 1.148
40000 ppm	5.580± 1.018	5.909± 1.316	5.842± 1.287	6.226± 2.249	6.501± 3.015	7.236± 4.991	7.011± 4.289

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
UNIT : g／kg／d a y
REPORT TYPE : A1 104
SEX : FEMALE

CHEMICAL INTAKE CHANGES (SUMMARY)
ALL ANIMALS

Group Name	Administration (weeks) 100	102	104
Control	0.000± 0.000	0.000± 0.000	0.000± 0.000
10000 ppm	1.402± 0.281	1.314± 0.205	1.340± 0.284
20000 ppm	3.702± 2.232	4.014± 3.627	3.062± 0.485
40000 ppm	6.594± 2.595	6.454± 2.584	7.502± 4.618

APPENDIX F 1

HEMATOLOGY (TOW-YEAR STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
Control	38	8.12± 1.51	14.5± 2.7	43.2± 7.5	53.4± 3.0	17.8± 1.3	33.4± 1.7	881± 178
7500 ppm	39	8.48± 1.73	15.0± 2.8	44.7± 7.5	53.8± 8.3	18.0± 2.0	33.5± 1.9	865± 232
15000 ppm	34	8.62± 1.19	15.3± 2.0	45.4± 5.3	52.9± 2.3	17.8± 0.5	33.7± 1.1	880± 109
30000 ppm	29	8.83± 1.74	15.9± 2.6	47.0± 7.4	54.2± 6.9	18.3± 2.4	33.7± 1.3	747± 167**

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

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHERS	
Control	38	5.56±	1.27	1±	1	58±	10	2±	2	0±	0	4±	2	32±	9	3±	3
7500 ppm	39	8.11±	9.83	1±	1	55±	12	1±	1	0±	0	4±	2	34±	11	6±	13
15000 ppm	34	5.86±	2.49	1±	2	55±	11	2±	1	0±	0	4±	2	35±	8	3±	4
30000 ppm	29	5.59±	1.60	1±	2	53±	9	2±	1	0±	0	4±	1	36±	9	4±	8

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

APPENDIX F 2

HEMATOLOGY (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
Control	40	7.91± 0.71	14.8± 1.5	43.1± 4.3	54.5± 2.9	18.7± 1.1	34.4± 1.3	684± 95
7500 ppm	34	7.82± 1.02	14.7± 1.9	43.5± 4.1	56.2± 4.8	18.8± 0.9	33.6± 2.1	632± 104
15000 ppm	31	7.80± 1.24	14.8± 2.1	43.3± 6.0	56.3± 6.5	19.1± 1.7	34.1± 1.6	643± 112
30000 ppm	11	7.80± 0.95	14.6± 1.3	43.3± 3.2	56.0± 4.4	18.8± 1.0	33.6± 0.8	590± 123*

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

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$	Differential WBC (%) N-BAND	N-SEG	EOSINO	BASO	MONO	LYMPHO	OTHERS
Control	40	2.82± 1.04	1± 2	53± 9	2± 1	0± 0	4± 2	37± 9	3± 2
7500 ppm	34	8.89± 29.44	1± 1	50± 17	2± 1	0± 0	4± 2	35± 12	8± 20
15000 ppm	31	4.08± 4.72	1± 1	50± 15	1± 1	0± 0	4± 2	37± 14	6± 16
30000 ppm	11	3.31± 2.21	1± 1	47± 12	1± 1	0± 0	4± 2	39± 9	8± 11

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

(HCL070)

APPENDIX F 3

HEMATOLOGY (TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
Control	31	9.57± 1.18	13.4± 1.5	41.2± 4.5	43.3± 2.6	14.1± 0.9	32.5± 1.0	1857± 498
10000 ppm	35	9.57± 1.07	13.6± 1.5	41.8± 4.1	43.8± 2.1	14.2± 0.7	32.5± 1.5	1854± 506
20000 ppm	27	9.59± 1.85	13.2± 2.3	40.9± 7.1	42.9± 3.6	13.8± 1.0	32.2± 1.5	1833± 531
40000 ppm	25	9.57± 1.10	13.4± 1.9	41.3± 4.9	43.2± 1.8	13.9± 0.7	32.3± 1.5	1957± 457

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-1
SEX : MALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHERS	
Control	31	2.97±	1.57	0±	1	32±	14	2±	2	0±	0	4±	2	61±	14	0±	1
10000 ppm	35	3.27±	1.90	0±	1	28±	13	1±	1	0±	0	3±	2	67±	13	1±	1
20000 ppm	27	3.96±	5.80	1±	1	32±	17	1±	1	0±	0	4±	2	60±	18	3±	11
40000 ppm	25	2.26±	0.99	0±	1	37±	17	1±	1	0±	0	4±	2	57±	18	1±	1

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

(HCL070)

APPENDIX F 4

HEMATOLOGY (TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	RED BLOOD CELL $10^6/\mu\ell$	HEMOGLOBIN g/dℓ	HEMATOCRIT %	MCV f ℓ	MCH p g	MCHC g/dℓ	PLATELET $10^3/\mu\ell$
Control	28	9.58± 0.66	14.0± 1.0	42.7± 2.7	44.6± 1.5	14.6± 0.5	32.8± 0.7	1173± 209
10000 ppm	23	9.76± 0.52	14.2± 0.8	43.3± 2.4	44.4± 1.0	14.6± 0.6	32.8± 1.2	1098± 182
20000 ppm	17	8.93± 1.46	13.2± 2.2	40.4± 5.5	45.6± 3.3	14.7± 0.6	32.4± 1.7	1083± 253
40000 ppm	26	9.53± 0.86	13.9± 1.3	42.5± 3.4	44.7± 1.6	14.6± 0.6	32.7± 0.8	1089± 309

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-1
SEX : FEMALE REPORT TYPE : A1

HEMATOLOGY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	WBC $10^3/\mu\ell$		Differential WBC (%) N-BAND		N-SEG		EOSINO		BASO		MONO		LYMPHO		OTHERS	
Control	28	1.83±	1.38	0±	1	29±	12	2±	2	0±	0	3±	2	64±	13	1±	2
10000 ppm	23	1.71±	1.01	1±	1	26±	11	2±	2	0±	0	4±	2	67±	12	0±	1
20000 ppm	17	2.05±	0.99	1±	1	28±	14	1±	2	0±	0	4±	2	64±	15	2±	3
40000 ppm	26	3.25±	3.17	1±	1	24±	11	2±	3	0±	0	4±	2	68±	12	2±	2

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

APPENDIX G 1

BIOCHEMISTRY (TOW-YEAR STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-2
SEX : MALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	38	6.5± 0.4	3.2± 0.2	1.0± 0.1	0.24± 0.03	152± 21	227± 77	258± 161
7500 ppm	39	6.5± 0.5	3.2± 0.3	1.0± 0.1	0.27± 0.13	152± 25	211± 71	245± 195
15000 ppm	34	6.5± 0.4	3.2± 0.2	1.0± 0.1	0.24± 0.02	156± 35	210± 57	225± 122
30000 ppm	29	6.2± 0.4**	3.2± 0.2	1.1± 0.1**	0.25± 0.07	147± 17	140± 35**	122± 45**

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

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-2
SEX : MALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	38	316± 100	70± 58	34± 20	163± 41	157± 55	7± 4	81± 12
7500 ppm	39	297± 97	84± 87	38± 25	230± 281*	179± 110	8± 6	88± 35
15000 ppm	34	289± 69	66± 23	30± 7	178± 40	143± 33	7± 4	80± 12
30000 ppm	29	202± 42**	87± 41**	38± 19	226± 152**	158± 60	7± 6	107± 92

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

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-2
SEX : MALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	38	27.4±	24.0	0.9±	0.6	144±	3	3.8±	0.3	107±	2	11.3±	0.8	5.0±	1.9
7500 ppm	39	29.0±	30.8	0.8±	0.2	144±	3	3.9±	0.4	107±	2	11.4±	0.9	5.2±	2.6
15000 ppm	34	25.2±	7.0	0.8±	0.2	144±	2	3.9±	0.4	108±	2	11.1±	0.4	4.4±	0.8
30000 ppm	29	38.0±	74.2	1.0±	1.6	145±	5	4.0±	0.8	109±	2*	10.8±	0.3**	4.8±	4.9**

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

APPENDIX G 2

BIOCHEMISTRY (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-2
SEX : FEMALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	40	6.8± 0.5	3.7± 0.3	1.2± 0.1	0.21± 0.05	152± 19	163± 64	141± 154
7500 ppm	34	6.9± 0.3	3.7± 0.2	1.2± 0.1	0.24± 0.07	151± 21	162± 53	166± 155
15000 ppm	31	6.8± 0.4	3.6± 0.2	1.2± 0.1	0.31± 0.58	147± 20	167± 49	149± 131
30000 ppm	11	6.6± 0.3	3.6± 0.2	1.2± 0.1	0.26± 0.20	156± 26	144± 19	77± 32

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

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-2
SEX : FEMALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	40	274± 93	97± 48	46± 17	189± 67	116± 42	3± 2	80± 16
7500 ppm	34	272± 80	117± 84	53± 24	256± 219	123± 52	3± 2	86± 41
15000 ppm	31	284± 85	164± 302	65± 59	328± 574	130± 88	4± 5	93± 68
30000 ppm	11	240± 32	192± 175**	79± 48**	215± 47	154± 84	6± 5	93± 31

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

STUDY NO. : 0224
ANIMAL : RAT F344
SAMPLING DATE : 105-2
SEX : FEMALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	40	16.2± 2.0	0.6± 0.1	142± 2	3.8± 0.4	107± 2	10.9± 0.4	3.9± 0.8
7500 ppm	34	16.7± 3.5	0.6± 0.1	142± 2	4.1± 0.4*	107± 3	10.9± 0.3	3.8± 0.9
15000 ppm	31	26.2± 51.6	0.8± 1.3	143± 4	3.9± 0.8	107± 2	10.9± 0.6	4.6± 5.0
30000 ppm	11	18.4± 2.0*	0.5± 0.0	143± 2	3.9± 0.4	107± 2	10.6± 0.3	3.7± 0.8

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

APPENDIX G 3

BIOCHEMISTRY (TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-2
SEX : MALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	31	5.6± 0.8	3.0± 0.5	1.2± 0.2	0.18± 0.05	176± 35	125± 61	39± 13
10000 ppm	35	5.4± 0.6	3.0± 0.4	1.2± 0.2	0.18± 0.07	174± 33	110± 25	47± 21
20000 ppm	27	5.5± 0.8	3.0± 0.4	1.2± 0.2	0.22± 0.16	156± 42	158± 173	44± 21
40000 ppm	25	5.2± 0.6	2.8± 0.4	1.2± 0.2	0.18± 0.05	162± 34	120± 41	46± 18

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-2
SEX : MALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	CPK IU/ℓ	UREA NITROGEN mg/dℓ	SODIUM mEq/ℓ
Control	31	128± 194	84± 144	488± 736	180± 118	59± 74	26.9± 15.0	156± 2
10000 ppm	35	214± 630	94± 203	493± 778	175± 83	46± 23	20.7± 2.4	156± 2
20000 ppm	27	733± 1891	589± 1489	2407± 6369	309± 432	59± 57	20.7± 2.9*	157± 2
40000 ppm	25	182± 278	128± 177	690± 947	238± 373	68± 73*	21.5± 8.5**	157± 2

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-2
SEX : MALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	POTASSIUM mEq/ℓ	CHLORIDE mEq/ℓ	CALCIUM mg/dℓ	INORGANIC PHOSPHORUS mg/dℓ
Control	31	4.1± 0.4	123± 4	9.3± 0.6	6.2± 0.7
10000 ppm	35	4.1± 0.3	123± 3	9.1± 0.3	6.5± 0.8
20000 ppm	27	4.0± 0.3	123± 3	9.4± 0.7	6.4± 0.7
40000 ppm	25	4.1± 0.4	123± 3	9.2± 0.5	6.3± 1.1

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

APPENDIX G 4

BIOCHEMISTRY (TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-2
SEX : FEMALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

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	28	5.3±	0.7	2.9±	0.4	1.2±	0.2	0.17±	0.02	133±	21	92±	47	46±	27
10000 ppm	24	5.2±	0.8	2.9±	0.1	1.3±	0.2	0.18±	0.03	137±	31	73±	12	49±	61
20000 ppm	18	5.4±	1.0	2.9±	0.3	1.2±	0.3	0.17±	0.03	130±	30	92±	86	48±	31
40000 ppm	26	5.6±	1.3	2.9±	0.3	1.2±	0.3	0.17±	0.02	129±	24	78±	34	45±	28

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-2
SEX : FEMALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	GOT IU/ℓ	GPT IU/ℓ	LDH IU/ℓ	ALP IU/ℓ	CPK IU/ℓ	UREA NITROGEN mg/dℓ	SODIUM mEq/ℓ
Control	28	91± 25	38± 14	301± 226	208± 114	64± 43	15.3± 2.3	154± 2
10000 ppm	24	88± 35	35± 16	265± 70	235± 79	79± 88	16.8± 3.3	154± 2
20000 ppm	18	141± 206	39± 21	1542± 5305	194± 70	80± 69	18.1± 3.5*	155± 2
40000 ppm	26	96± 38	47± 32	347± 203	214± 89	65± 45	21.1± 7.7**	155± 2

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 105-2
SEX : FEMALE REPORT TYPE : A1

BIOCHEMISTRY (SUMMARY)
ALL ANIMALS (105W)

Group Name	NO. of Animals	POTASSIUM mEq/ℓ		CHLORIDE mEq/ℓ		CALCIUM mg/dℓ		INORGANIC PHOSPHORUS mg/dℓ	
Control	28	4.1±	0.3	124±	4	9.4±	0.6	6.7±	1.0
10000 ppm	24	4.1±	0.3	124±	2	9.2±	0.4	6.5±	0.8
20000 ppm	18	4.0±	0.3	123±	3	9.4±	0.7	6.7±	1.0
40000 ppm	26	3.9±	0.3*	123±	3	9.4±	0.6	6.7±	0.9

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

APPENDIX H 1

URINALYSIS (TOW-YEAR STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0224 URINALYSIS
ANIMAL : RAT F344
SAMPLING DATE : 104-1
SEX : MALE REPORT TYPE : A1

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	38	0	1	6	12	12	7	0		0	0	0	1	18	19		38	0	0	0	0	0		36	2	0	0	0	0		37	1	0	0	
7500 ppm	40	0	1	5	16	11	7	0		0	0	1	0	6	33	**	40	0	0	0	0	0		40	0	0	0	0	0		39	0	0	1	
15000 ppm	35	0	0	5	20	9	1	0		0	0	0	0	0	35	**	35	0	0	0	0	0		35	0	0	0	0	0		35	0	0	0	
30000 ppm	30	0	0	10	18	2	0	0	**	0	0	0	0	1	29	**	30	0	0	0	0	0		30	0	0	0	0	0		29	1	0	0	

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

STUDY NO. : 0224 URINALYSIS
ANIMAL : RAT F344
SAMPLING DATE : 104-1
SEX : MALE REPORT TYPE : A1

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
Control	38	38	0	0	0	0		38	0	0	0	0	
7500 ppm	40	39	1	0	0	0		40	0	0	0	0	
15000 ppm	35	33	1	0	0	1		35	0	0	0	0	
30000 ppm	30	30	0	0	0	0		30	0	0	0	0	

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

APPENDIX H 2

URINALYSIS (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0224 URINALYSIS
ANIMAL : RAT F344
SAMPLING DATE : 104-1
SEX : FEMALE REPORT TYPE : A1

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	47	0	1	11	13	15	5	2		0	0	0	5	21	21		47	0	0	0	0	0		33	12	1	0	1	0		46	0	0	1	
7500 ppm	39	0	0	3	17	16	3	0		0	0	0	5	20	14		39	0	0	0	0	0		36	3	0	0	0	0		39	0	0	0	
15000 ppm	35	0	0	7	16	9	2	1		0	0	0	0	16	19		35	0	0	0	0	0		35	0	0	0	0	0	**	34	0	0	1	
30000 ppm	14	0	0	5	4	4	1	0		0	0	0	0	5	9		14	0	0	0	0	0		14	0	0	0	0	0		14	0	0	0	

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

STUDY NO. : 0224 URINALYSIS
ANIMAL : RAT F344
SAMPLING DATE : 104-1
SEX : FEMALE REPORT TYPE : A1

Group Name	NO. of Animals	Occult blood −	±	+	2+	3+	CHI	Urobilinogen ±	+	2+	3+	4+	CHI
Control	47	42	4	0	1	0		47	0	0	0	0	
7500 ppm	39	38	0	0	1	0		39	0	0	0	0	
15000 ppm	35	35	0	0	0	0		35	0	0	0	0	
30000 ppm	14	14	0	0	0	0		14	0	0	0	0	

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

APPENDIX H 3

URINALYSIS (TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0225 URINALYSIS
ANIMAL : MOUSE BDF1
SAMPLING DATE : 104-3
SEX : MALE REPORT TYPE : A1

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	35	0	5	11	9	6	4	0		0	3	21	10	1	0		35	0	0	0	0	0		14	21	0	0	0	0		33	0	0	0	2	
10000 ppm	35	0	0	5	20	8	2	0	*	0	0	8	26	1	0	**	35	0	0	0	0	0		25	10	0	0	0	0	**	34	0	0	0	1	
20000 ppm	30	0	0	9	14	3	4	0		0	0	3	21	6	0	**	30	0	0	0	0	0		27	3	0	0	0	0	**	29	1	0	0	0	
40000 ppm	25	0	0	5	19	1	0	0	**	0	0	0	4	17	4	**	25	0	0	0	0	0		25	0	0	0	0	0	**	24	1	0	0	0	

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

STUDY NO. : 0225 URINALYSIS
ANIMAL : MOUSE BDF1
SAMPLING DATE : 104-3
SEX : MALE REPORT TYPE : A1

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
Control	35	35	0	0	0	0	
10000 ppm	35	35	0	0	0	0	
20000 ppm	30	30	0	0	0	0	
40000 ppm	25	25	0	0	0	0	

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

APPENDIX H 4

URINALYSIS (TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 104-3
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	29	0	1	1	6	9	11	1		0	0	20	6	2	1		29	0	0	0	0	0		1	11	16	1	0	0		25	1	2	1	0	
10000 ppm	25	0	0	1	8	8	8	0		0	1	3	14	6	1	**	25	0	0	0	0	0		16	9	0	0	0	0	**	18	4	1	1	1	
20000 ppm	19	0	0	0	6	8	5	0		0	0	2	6	7	4	**	19	0	0	0	0	0		17	2	0	0	0	0	**	15	3	0	0	1	
40000 ppm	31	0	0	5	9	13	4	0		0	0	0	2	6	23	**	31	0	0	0	0	0		31	0	0	0	0	0	**	21	1	2	4	3	

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
SAMPLING DATE : 104-3
SEX : FEMALE REPORT TYPE : A1

URINALYSIS

Group Name	NO. of Animals	Urobilinogen ±	+	2+	3+	4+	CHI
Control	29	29	0	0	0	0	
10000 ppm	25	25	0	0	0	0	
20000 ppm	19	19	0	0	0	0	
40000 ppm	31	31	0	0	0	0	

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

APPENDIX I 1

GROSS FINDINGS (TOW-YEAR STUDY: SUMMARY)

RAT : MALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name NO. of Animals	Control 12 (%)	7500 ppm 11 (%)	15000 ppm 16 (%)	30000 ppm 20 (%)
skin/app	nodule		1 (8)	0 (0)	0 (0)	2 (10)
subcutis	jaundice		1 (8)	0 (0)	1 (6)	1 (5)
	mass		1 (8)	4 (36)	3 (19)	5 (25)
lung	red		0 (0)	1 (9)	1 (6)	0 (0)
	white zone		0 (0)	1 (9)	0 (0)	0 (0)
	red zone		0 (0)	0 (0)	1 (6)	0 (0)
	nodule		0 (0)	0 (0)	0 (0)	1 (5)
lymph node	enlarged		1 (8)	0 (0)	1 (6)	1 (5)
spleen	enlarged		5 (42)	0 (0)	4 (25)	2 (10)
	white zone		1 (8)	0 (0)	0 (0)	0 (0)
	nodule		0 (0)	0 (0)	1 (6)	0 (0)
heart	white zone		0 (0)	0 (0)	0 (0)	5 (25)
	dilated		0 (0)	0 (0)	1 (6)	0 (0)
forestomach	ulcer		0 (0)	0 (0)	1 (6)	0 (0)
gl stomach	red zone		1 (8)	0 (0)	0 (0)	0 (0)
	ulcer		0 (0)	1 (9)	3 (19)	0 (0)
liver	enlarged		3 (25)	0 (0)	2 (13)	1 (5)
	yellow		1 (8)	0 (0)	0 (0)	0 (0)
	yellow zone		0 (0)	0 (0)	1 (6)	0 (0)
	nodule		0 (0)	0 (0)	1 (6)	0 (0)
	rough		1 (8)	0 (0)	0 (0)	0 (0)
pancreas	nodule		0 (0)	1 (9)	0 (0)	0 (0)

Organ	Findings	Group Name NO. of Animals	Control 12 (%)	7500 ppm 11 (%)	15000 ppm 16 (%)	30000 ppm 20 (%)
kidney	pale		0 (0)	0 (0)	0 (0)	2 (10)
	white zone		0 (0)	0 (0)	0 (0)	1 (5)
	granular		2 (17)	1 (9)	2 (13)	3 (15)
urin bladd	urine:red		0 (0)	0 (0)	1 (6)	0 (0)
pituitary	enlarged		2 (17)	2 (18)	3 (19)	2 (10)
	red zone		1 (8)	0 (0)	0 (0)	3 (15)
	nodule		0 (0)	1 (9)	0 (0)	3 (15)
adrenal	enlarged		1 (8)	0 (0)	1 (6)	1 (5)
testis	atrophic		1 (8)	0 (0)	2 (13)	1 (5)
	nodule		8 (67)	3 (27)	8 (50)	9 (45)
prostate	brown		1 (8)	0 (0)	0 (0)	0 (0)
brain	red zone		1 (8)	0 (0)	0 (0)	0 (0)
	elevated		0 (0)	1 (9)	0 (0)	0 (0)
spinal cord	red zone		1 (8)	0 (0)	0 (0)	0 (0)
	hemorrhage		0 (0)	0 (0)	1 (6)	0 (0)
eye	white		1 (8)	0 (0)	1 (6)	2 (10)
Zymbal gl	nodule		0 (0)	0 (0)	0 (0)	1 (5)
muscle	nodule		1 (8)	0 (0)	1 (6)	0 (0)
peritoneum	nodule		0 (0)	3 (27)	4 (25)	2 (10)
abdominal c	brown		0 (0)	0 (0)	0 (0)	1 (5)
	ascites		0 (0)	1 (9)	2 (13)	0 (0)
thoracic ca	pleural fluid		1 (8)	1 (9)	1 (6)	1 (5)

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name NO. of Animals	Control 12 (%)	7500 ppm 11 (%)	15000 ppm 16 (%)	30000 ppm 20 (%)
other	hindlimb:nodule		0 (0)	0 (0)	0 (0)	1 (5)
whole body	anemic		1 (8)	0 (0)	1 (6)	0 (0)

APPENDIX I 2

GROSS FINDINGS (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name NO. of Animals	Control 3 (%)	7500 ppm 11 (%)	15000 ppm 15 (%)	30000 ppm 36 (%)
subcutis	jaundice		0 (0)	0 (0)	0 (0)	1 (3)
	dry		0 (0)	0 (0)	0 (0)	1 (3)
	mass		1 (33)	4 (36)	3 (20)	4 (11)
lung	white zone		0 (0)	0 (0)	1 (7)	1 (3)
	red zone		0 (0)	1 (9)	0 (0)	0 (0)
	voluminus		0 (0)	0 (0)	0 (0)	1 (3)
lymph node	enlarged		0 (0)	1 (9)	0 (0)	0 (0)
spleen	enlarged		0 (0)	4 (36)	1 (7)	3 (8)
	atrophic		0 (0)	0 (0)	0 (0)	2 (6)
	adhesion		0 (0)	0 (0)	0 (0)	1 (3)
heart	white zone		0 (0)	0 (0)	0 (0)	6 (17)
	dilated		0 (0)	0 (0)	0 (0)	1 (3)
oral cavity	ulcer		1 (33)	0 (0)	0 (0)	0 (0)
forestomach	ulcer		0 (0)	1 (9)	1 (7)	1 (3)
	thick		0 (0)	1 (9)	0 (0)	0 (0)
gl stomach	ulcer		0 (0)	0 (0)	0 (0)	1 (3)
large intes	nodule		0 (0)	0 (0)	1 (7)	0 (0)
liver	white zone		0 (0)	0 (0)	1 (7)	0 (0)
	nodule		1 (33)	0 (0)	0 (0)	1 (3)
	rough		0 (0)	3 (27)	0 (0)	1 (3)
	granular		0 (0)	0 (0)	1 (7)	0 (0)
	herniation		0 (0)	0 (0)	0 (0)	2 (6)

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name NO. of Animals	Control 3 (%)	7500 ppm 11 (%)	15000 ppm 15 (%)	30000 ppm 36 (%)
kidney	turbid		0 (0)	0 (0)	0 (0)	1 (3)
	pale		0 (0)	0 (0)	0 (0)	1 (3)
	deformed		0 (0)	0 (0)	1 (7)	0 (0)
	granular		1 (33)	1 (9)	1 (7)	0 (0)
pituitary	enlarged		1 (33)	4 (36)	2 (13)	2 (6)
	red zone		0 (0)	0 (0)	1 (7)	2 (6)
	nodule		0 (0)	0 (0)	1 (7)	3 (8)
thyroid	enlarged		0 (0)	0 (0)	1 (7)	0 (0)
adrenal	enlarged		1 (33)	0 (0)	0 (0)	0 (0)
ovary	cyst		0 (0)	0 (0)	1 (7)	1 (3)
uterus	nodule		0 (0)	0 (0)	6 (40)	2 (6)
	dilated lumen		0 (0)	0 (0)	0 (0)	1 (3)
vagina	nodule		0 (0)	0 (0)	1 (7)	2 (6)
prep/cli gl	nodule		0 (0)	0 (0)	0 (0)	1 (3)
spinal cord	red zone		0 (0)	1 (9)	0 (0)	0 (0)
eye	white		1 (33)	1 (9)	0 (0)	2 (6)
	red		0 (0)	0 (0)	1 (7)	0 (0)
Harder gl	enlarged		1 (33)	0 (0)	0 (0)	0 (0)
Zymbal gl	nodule		0 (0)	0 (0)	1 (7)	0 (0)
abdominal c	hemorrhage		0 (0)	1 (9)	0 (0)	0 (0)
	mass		0 (0)	0 (0)	0 (0)	1 (3)
	ascites		0 (0)	0 (0)	0 (0)	1 (3)

Organ	Findings	Group Name NO. of Animals	Control 3 (%)	7500 ppm 11 (%)	15000 ppm 15 (%)	30000 ppm 36 (%)
adipose	white zone		0 (0)	0 (0)	0 (0)	1 (3)
thoracic ca	pleural fluid		0 (0)	0 (0)	0 (0)	1 (3)
whole body	anemic		0 (0)	1 (9)	1 (7)	0 (0)

APPENDIX I 3

GROSS FINDINGS (TOW-YEAR STUDY: SUMMARY)

RAT : MALE : SACRIFICED ANIMALS

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / NO. of Animals	Control 38 (%)	7500 ppm 39 (%)	15000 ppm 34 (%)	30000 ppm 30 (%)
skin/app	nodule		2 (5)	6 (15)	1 (3)	7 (23)
	scab		0 (0)	0 (0)	1 (3)	0 (0)
subcutis	mass		8 (21)	6 (15)	5 (15)	3 (10)
nasal cavit	nodule		0 (0)	1 (3)	0 (0)	0 (0)
lung	nodule		2 (5)	1 (3)	5 (15)	5 (17)
lymph node	enlarged		0 (0)	1 (3)	0 (0)	1 (3)
spleen	enlarged		1 (3)	2 (5)	0 (0)	3 (10)
	deformed		0 (0)	2 (5)	1 (3)	0 (0)
salivary gl	cyst		1 (3)	0 (0)	0 (0)	0 (0)
forestomach	nodule		0 (0)	0 (0)	1 (3)	0 (0)
	ulcer		1 (3)	0 (0)	0 (0)	0 (0)
small intes	nodule		0 (0)	0 (0)	1 (3)	0 (0)
large intes	nodule		0 (0)	1 (3)	0 (0)	0 (0)
liver	white zone		0 (0)	1 (3)	0 (0)	1 (3)
	nodule		1 (3)	1 (3)	0 (0)	2 (7)
	rough		0 (0)	2 (5)	0 (0)	1 (3)
	herniation		0 (0)	1 (3)	1 (3)	1 (3)
pancreas	nodule		1 (3)	0 (0)	0 (0)	0 (0)
kidney	cyst		1 (3)	0 (0)	0 (0)	0 (0)
	granular		20 (53)	22 (56)	15 (44)	2 (7)
pituitary	enlarged		3 (8)	2 (5)	1 (3)	0 (0)
	red zone		0 (0)	0 (0)	1 (3)	1 (3)

Organ	Findings	Group Name NO. of Animals	Control 38 (%)	7500 ppm 39 (%)	15000 ppm 34 (%)	30000 ppm 30 (%)
pituitary	nodule		5 (13)	4 (10)	3 (9)	3 (10)
thyroid	enlarged		1 (3)	2 (5)	4 (12)	0 (0)
	nodule		0 (0)	1 (3)	0 (0)	0 (0)
adrenal	enlarged		2 (5)	0 (0)	1 (3)	1 (3)
testis	nodule		35 (92)	37 (95)	34 (100)	27 (90)
eye	white		3 (8)	5 (13)	5 (15)	0 (0)
	red		1 (3)	0 (0)	0 (0)	0 (0)
vertebra	nodule		0 (0)	0 (0)	0 (0)	1 (3)
peritoneum	nodule		1 (3)	2 (5)	0 (0)	1 (3)
retroperit	edema		0 (0)	0 (0)	1 (3)	0 (0)
	nodule		0 (0)	1 (3)	0 (0)	0 (0)
abdominal c	ascites		0 (0)	2 (5)	1 (3)	1 (3)
other	lip:nodule		1 (3)	0 (0)	0 (0)	1 (3)
	ear:nodule		0 (0)	1 (3)	1 (3)	0 (0)

APPENDIX I 4

GROSS FINDINGS (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE : SACRIFICED ANIMALS

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / NO. of Animals	Control 47 (%)	7500 ppm 39 (%)	15000 ppm 35 (%)	30000 ppm 14 (%)
skin/app	nodule		2 (4)	0 (0)	0 (0)	1 (7)
	scab		1 (2)	1 (3)	0 (0)	0 (0)
subcutis	mass		7 (15)	7 (18)	3 (9)	2 (14)
lung	nodule		1 (2)	2 (5)	0 (0)	0 (0)
lymph node	enlarged		0 (0)	2 (5)	0 (0)	0 (0)
spleen	enlarged		1 (2)	3 (8)	1 (3)	1 (7)
	deformed		2 (4)	0 (0)	0 (0)	0 (0)
heart	white zone		0 (0)	0 (0)	1 (3)	0 (0)
oral cavity	nodule		0 (0)	1 (3)	0 (0)	0 (0)
small intes	nodule		0 (0)	1 (3)	0 (0)	0 (0)
liver	white patch		1 (2)	0 (0)	0 (0)	0 (0)
	nodule		1 (2)	0 (0)	0 (0)	0 (0)
	deformed		0 (0)	0 (0)	1 (3)	0 (0)
	rough		2 (4)	2 (5)	1 (3)	1 (7)
	herniation		2 (4)	3 (8)	1 (3)	0 (0)
pancreas	nodule		1 (2)	0 (0)	0 (0)	0 (0)
kidney	nodule		0 (0)	0 (0)	0 (0)	1 (7)
	granular		4 (9)	5 (13)	3 (9)	0 (0)
pituitary	enlarged		3 (6)	3 (8)	1 (3)	0 (0)
	red zone		3 (6)	3 (8)	5 (14)	1 (7)
	nodule		6 (13)	3 (8)	3 (9)	1 (7)
thyroid	enlarged		1 (2)	1 (3)	1 (3)	0 (0)

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name NO. of Animals	Control 47 (%)	7500 ppm 39 (%)	15000 ppm 35 (%)	30000 ppm 14 (%)
adrenal	enlarged		0 (0)	2 (5)	0 (0)	0 (0)
ovary	enlarged		0 (0)	1 (3)	2 (6)	0 (0)
	nodule		1 (2)	0 (0)	0 (0)	0 (0)
	cyst		1 (2)	2 (5)	0 (0)	0 (0)
uterus	nodule		10 (21)	4 (10)	3 (9)	2 (14)
eye	white		1 (2)	1 (3)	3 (9)	0 (0)
Zymbal gl	nodule		1 (2)	0 (0)	0 (0)	0 (0)
thoracic ca	hemorrhage		0 (0)	1 (3)	0 (0)	0 (0)
other	lip:nodule		0 (0)	1 (3)	2 (6)	1 (7)
	ear:nodule		1 (2)	0 (0)	0 (0)	0 (0)

APPENDIX I 5

GROSS FINDINGS(TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / NO. of Animals	Control 16	(%)	10000 ppm 15	(%)	20000 ppm 20	(%)	40000 ppm 25	(%)
skin/app	ulcer		0	(0)	2	(13)	1	(5)	3	(12)
subcutis	edema		0	(0)	1	(7)	0	(0)	2	(8)
	mass		1	(6)	3	(20)	2	(10)	1	(4)
	thick		0	(0)	1	(7)	0	(0)	0	(0)
lung	red zone		0	(0)	1	(7)	0	(0)	0	(0)
	nodule		2	(13)	3	(20)	3	(15)	1	(4)
lymph node	enlarged		3	(19)	0	(0)	2	(10)	4	(16)
spleen	enlarged		2	(13)	0	(0)	0	(0)	5	(20)
	red zone		0	(0)	0	(0)	1	(5)	0	(0)
	black zone		0	(0)	0	(0)	0	(0)	1	(4)
	nodule		0	(0)	2	(13)	1	(5)	0	(0)
	deformed		0	(0)	0	(0)	0	(0)	1	(4)
	adhesion		0	(0)	1	(7)	0	(0)	0	(0)
heart	white zone		0	(0)	0	(0)	0	(0)	1	(4)
salivary gl	nodule		0	(0)	0	(0)	0	(0)	1	(4)
gl stomach	white		1	(6)	0	(0)	0	(0)	0	(0)
small intes	nodule		0	(0)	0	(0)	1	(5)	0	(0)
	adhesion		0	(0)	1	(7)	0	(0)	0	(0)
large intes	adhesion		0	(0)	1	(7)	0	(0)	0	(0)
liver	enlarged		1	(6)	0	(0)	1	(5)	3	(12)
	pale		1	(6)	1	(7)	0	(0)	0	(0)
	white zone		0	(0)	1	(7)	3	(15)	4	(16)

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / NO. of Animals	Control 16 (%)	10000 ppm 15 (%)	20000 ppm 20 (%)	40000 ppm 25 (%)
liver	red zone		0 (0)	1 (7)	1 (5)	0 (0)
	nodule		5 (31)	6 (40)	7 (35)	7 (28)
	deformed		0 (0)	1 (7)	0 (0)	0 (0)
	adhesion		0 (0)	1 (7)	0 (0)	0 (0)
pancreas	thick		0 (0)	1 (7)	0 (0)	0 (0)
kidney	atrophic		0 (0)	0 (0)	0 (0)	1 (4)
	pale		1 (6)	0 (0)	1 (5)	1 (4)
	white patch		1 (6)	0 (0)	0 (0)	0 (0)
	hydronephrosis		2 (13)	0 (0)	0 (0)	0 (0)
urin bladd	red zone		1 (6)	0 (0)	0 (0)	0 (0)
	dilated		1 (6)	0 (0)	0 (0)	0 (0)
	urine:marked retention		3 (19)	4 (27)	4 (20)	3 (12)
testis	atrophic		0 (0)	0 (0)	0 (0)	1 (4)
epididymis	red		0 (0)	0 (0)	0 (0)	1 (4)
	nodule		0 (0)	1 (7)	1 (5)	0 (0)
	adhesion		0 (0)	1 (7)	0 (0)	0 (0)
semin ves	red		1 (6)	0 (0)	0 (0)	0 (0)
	adhesion		0 (0)	1 (7)	1 (5)	0 (0)
prep/cli gl	enlarged		0 (0)	1 (7)	0 (0)	1 (4)
	nodule		0 (0)	0 (0)	1 (5)	0 (0)
brain	swollen		0 (0)	0 (0)	1 (5)	0 (0)
	red zone		1 (6)	1 (7)	1 (5)	0 (0)

Organ	Findings	Group Name / NO. of Animals	Control 16 (%)	10000 ppm 15 (%)	20000 ppm 20 (%)	40000 ppm 25 (%)
periph nerv	enlarged		0 (0)	0 (0)	0 (0)	1 (4)
Harder gl	enlarged		1 (6)	0 (0)	1 (5)	0 (0)
	nodule		0 (0)	0 (0)	0 (0)	1 (4)
mediastinum	mass		0 (0)	0 (0)	0 (0)	2 (8)
abdominal c	hemorrhage		0 (0)	0 (0)	2 (10)	0 (0)
	ascites		1 (6)	3 (20)	0 (0)	2 (8)
mesenterium	nodule		0 (0)	0 (0)	0 (0)	1 (4)
thoracic ca	hemorrhage		0 (0)	1 (7)	0 (0)	1 (4)
	pleural fluid		3 (19)	3 (20)	0 (0)	2 (8)
other	red zone		0 (0)	0 (0)	0 (0)	1 (4)
	hindlimb:nodule		0 (0)	0 (0)	0 (0)	1 (4)

APPENDIX I 6

GROSS FINDINGS (TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE : DEAD AND MORIBUND ANIMALS

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / NO. of Animals	Control 21 (%)	10000 ppm 26 (%)	20000 ppm 31 (%)	40000 ppm 22 (%)
subcutis	red zone		1 (5)	0 (0)	0 (0)	0 (0)
	edema		5 (24)	5 (19)	6 (19)	3 (14)
	nodule		0 (0)	1 (4)	0 (0)	0 (0)
	mass		2 (10)	4 (15)	3 (10)	6 (27)
lung	red zone		0 (0)	0 (0)	1 (3)	0 (0)
	edema		1 (5)	0 (0)	0 (0)	0 (0)
	nodule		1 (5)	0 (0)	1 (3)	2 (9)
lymph node	enlarged		3 (14)	8 (31)	6 (19)	3 (14)
	white		0 (0)	0 (0)	0 (0)	1 (5)
thymus	enlarged		1 (5)	0 (0)	1 (3)	0 (0)
spleen	enlarged		6 (29)	8 (31)	7 (23)	4 (18)
	nodule		0 (0)	1 (4)	0 (0)	0 (0)
	accentuation of white pulp		0 (0)	1 (4)	0 (0)	0 (0)
heart	dilated		0 (0)	1 (4)	0 (0)	0 (0)
forestomach	nodule		1 (5)	0 (0)	0 (0)	1 (5)
small intes	nodule		1 (5)	0 (0)	0 (0)	0 (0)
liver	enlarged		4 (19)	2 (8)	9 (29)	1 (5)
	white zone		4 (19)	4 (15)	8 (26)	1 (5)
	red zone		2 (10)	0 (0)	1 (3)	2 (9)
	nodule		1 (5)	5 (19)	1 (3)	6 (27)
	rough		1 (5)	0 (0)	0 (0)	0 (0)
	nodular		0 (0)	1 (4)	0 (0)	0 (0)

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / NO. of Animals	Control 21 (%)	10000 ppm 26 (%)	20000 ppm 31 (%)	40000 ppm 22 (%)
liver	adhesion		1 (5)	0 (0)	0 (0)	0 (0)
pancreas	nodule		2 (10)	0 (0)	3 (10)	0 (0)
kidney	enlarged		0 (0)	0 (0)	0 (0)	1 (5)
	pale		0 (0)	0 (0)	0 (0)	1 (5)
	black zone		1 (5)	0 (0)	0 (0)	0 (0)
	nodule		0 (0)	1 (4)	0 (0)	0 (0)
	granular		1 (5)	0 (0)	0 (0)	0 (0)
	hydronephrosis		2 (10)	0 (0)	2 (6)	1 (5)
ureter	dilated		0 (0)	0 (0)	0 (0)	1 (5)
urin bladd	urine:marked retention		0 (0)	1 (4)	0 (0)	1 (5)
pituitary	enlarged		2 (10)	1 (4)	2 (6)	2 (9)
	nodule		0 (0)	1 (4)	2 (6)	0 (0)
ovary	enlarged		6 (29)	3 (12)	5 (16)	6 (27)
	cyst		1 (5)	3 (12)	2 (6)	1 (5)
uterus	nodule		7 (33)	3 (12)	10 (32)	8 (36)
brain	red zone		0 (0)	1 (4)	1 (3)	0 (0)
periph nerv	nodule		0 (0)	1 (4)	0 (0)	0 (0)
Harder gl	nodule		1 (5)	0 (0)	0 (0)	0 (0)
mediastinum	nodule		1 (5)	1 (4)	0 (0)	0 (0)
	mass		1 (5)	1 (4)	2 (6)	3 (14)
peritoneum	nodule		0 (0)	0 (0)	1 (3)	0 (0)
	mass		0 (0)	1 (4)	0 (0)	0 (0)

Organ	Findings	Group Name / NO. of Animals	Control 21 (%)	10000 ppm 26 (%)	20000 ppm 31 (%)	40000 ppm 22 (%)
peritoneum	thick		1 (5)	2 (8)	1 (3)	1 (5)
retroperit	mass		0 (0)	1 (4)	0 (0)	1 (5)
abdominal c	hemorrhage		0 (0)	1 (4)	3 (10)	1 (5)
	ascites		8 (38)	7 (27)	12 (39)	7 (32)
thoracic ca	pleural fluid		6 (29)	13 (50)	13 (42)	12 (55)
other	hindlimb:nodule		1 (5)	0 (0)	0 (0)	0 (0)
whole body	anemic		1 (5)	0 (0)	0 (0)	0 (0)

APPENDIX I 7

GROSS FINDINGS (TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE : SACRIFICED ANIMALS

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / NO. of Animals	Control 34 (%)	10000 ppm 35 (%)	20000 ppm 30 (%)	40000 ppm 25 (%)
skin/app	nodule		0 (0)	1 (3)	0 (0)	0 (0)
	ulcer		0 (0)	0 (0)	1 (3)	0 (0)
	erosion		1 (3)	0 (0)	0 (0)	0 (0)
	scab		1 (3)	1 (3)	0 (0)	0 (0)
subcutis	mass		2 (6)	0 (0)	1 (3)	0 (0)
lung	white zone		0 (0)	0 (0)	0 (0)	1 (4)
	nodule		4 (12)	5 (14)	7 (23)	5 (20)
lymph node	enlarged		2 (6)	3 (9)	2 (7)	1 (4)
spleen	enlarged		2 (6)	1 (3)	2 (7)	0 (0)
	black zone		1 (3)	4 (11)	1 (3)	1 (4)
	nodule		1 (3)	0 (0)	1 (3)	1 (4)
	deformed		1 (3)	0 (0)	0 (0)	0 (0)
tongue	nodule		0 (0)	0 (0)	1 (3)	0 (0)
forestomach	nodule		0 (0)	0 (0)	1 (3)	0 (0)
	ulcer		0 (0)	0 (0)	0 (0)	1 (4)
liver	red zone		0 (0)	1 (3)	1 (3)	0 (0)
	nodule		17 (50)	21 (60)	16 (53)	14 (56)
pancreas	nodule		2 (6)	0 (0)	1 (3)	1 (4)
kidney	atrophic		0 (0)	0 (0)	0 (0)	1 (4)
	white zone		0 (0)	0 (0)	1 (3)	0 (0)
	hydronephrosis		1 (3)	0 (0)	1 (3)	0 (0)
urin bladd	urine:marked retention		2 (6)	0 (0)	0 (0)	0 (0)

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / NO. of Animals	Control 34 (%)	10000 ppm 35 (%)	20000 ppm 30 (%)	40000 ppm 25 (%)
adrenal	enlarged		1 (3)	0 (0)	0 (0)	0 (0)
testis	enlarged		1 (3)	0 (0)	0 (0)	0 (0)
epididymis	nodule		0 (0)	0 (0)	1 (3)	0 (0)
prep/cli gl	enlarged		0 (0)	0 (0)	0 (0)	1 (4)
Harder gl	enlarged		0 (0)	0 (0)	0 (0)	1 (4)
	nodule		0 (0)	1 (3)	1 (3)	0 (0)
pleura	nodule		0 (0)	0 (0)	0 (0)	1 (4)
peritoneum	nodule		0 (0)	1 (3)	0 (0)	0 (0)
other	tail:nodule		0 (0)	1 (3)	0 (0)	0 (0)
	hindlimb:nodule		0 (0)	0 (0)	1 (3)	1 (4)

APPENDIX I 8

GROSS FINDINGS(TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE : SACRIFICED ANIMALS

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name NO. of Animals	Control 29 (%)	10000 ppm 24 (%)	20000 ppm 19 (%)	40000 ppm 28 (%)
skin/app	nodule		1 (3)	0 (0)	0 (0)	1 (4)
	scab		0 (0)	0 (0)	0 (0)	1 (4)
subcutis	mass		2 (7)	0 (0)	0 (0)	1 (4)
lung	nodule		1 (3)	3 (13)	1 (5)	2 (7)
lymph node	enlarged		4 (14)	1 (4)	3 (16)	2 (7)
spleen	enlarged		1 (3)	1 (4)	1 (5)	3 (11)
	white zone		0 (0)	0 (0)	0 (0)	1 (4)
	black zone		1 (3)	1 (4)	0 (0)	0 (0)
	nodule		0 (0)	0 (0)	0 (0)	1 (4)
	deformed		1 (3)	0 (0)	1 (5)	0 (0)
tongue	nodule		0 (0)	0 (0)	0 (0)	1 (4)
salivary gl	enlarged		0 (0)	1 (4)	0 (0)	0 (0)
forestomach	nodule		1 (3)	0 (0)	0 (0)	0 (0)
gl stomach	ulcer		0 (0)	0 (0)	1 (5)	0 (0)
duodenum	nodule		0 (0)	0 (0)	1 (5)	1 (4)
liver	enlarged		0 (0)	0 (0)	0 (0)	1 (4)
	red zone		0 (0)	0 (0)	0 (0)	1 (4)
	nodule		4 (14)	9 (38)	6 (32)	8 (29)
	rough		0 (0)	0 (0)	0 (0)	1 (4)
kidney	white zone		0 (0)	1 (4)	0 (0)	1 (4)
	hydronephrosis		0 (0)	0 (0)	0 (0)	1 (4)
urin bladd	nodule		0 (0)	1 (4)	0 (0)	0 (0)

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

GROSS FINDINGS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / NO. of Animals	Control 29 (%)	10000 ppm 24 (%)	20000 ppm 19 (%)	40000 ppm 28 (%)
pituitary	enlarged		3 (10)	2 (8)	2 (11)	0 (0)
	red zone		0 (0)	0 (0)	1 (5)	0 (0)
	nodule		6 (21)	3 (13)	2 (11)	6 (21)
ovary	enlarged		0 (0)	0 (0)	0 (0)	1 (4)
	cyst		3 (10)	4 (17)	4 (21)	2 (7)
uterus	nodule		2 (7)	3 (13)	3 (16)	3 (11)
eye	white		0 (0)	0 (0)	0 (0)	1 (4)
Harder gl	enlarged		0 (0)	0 (0)	0 (0)	1 (4)
peritoneum	nodule		0 (0)	0 (0)	0 (0)	1 (4)
abdominal c	ascites		0 (0)	4 (17)	4 (21)	2 (7)
thoracic ca	pleural fluid		0 (0)	0 (0)	0 (0)	1 (4)
other	scab		1 (3)	0 (0)	0 (0)	0 (0)

APPENDIX J 1

ORGAN WEIGHT, ABSOLUTE, (TOW-YEAR STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight	ADRENALS	TESTES	HEART	LUNGS	KIDNEYS
Control	38	420± 50	0.090± 0.047	4.132± 1.444	1.236± 0.120	1.460± 0.111	3.099± 0.533
7500 ppm	39	418± 34	0.082± 0.015	4.481± 1.550	1.229± 0.105	1.495± 0.185	3.136± 0.420
15000 ppm	34	403± 38	0.164± 0.481	4.822± 1.464	1.195± 0.161	1.505± 0.178	3.070± 0.419
30000 ppm	30	378± 40**	0.083± 0.034	4.901± 1.643	1.145± 0.118*	1.515± 0.424	2.788± 0.136**

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

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN	LIVER	BRAIN
Control	38	1.180± 0.375	13.268± 1.663	2.025± 0.041
7500 ppm	39	1.587± 2.032	13.622± 2.043	2.016± 0.057
15000 ppm	34	1.214± 0.257	12.783± 1.441	2.007± 0.056
30000 ppm	30	1.415± 1.132	12.168± 4.073**	2.006± 0.055

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

APPENDIX J 2

ORGAN WEIGHT, ABSOLUTE (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight	ADRENALS	OVARIES	HEART	LUNGS	KIDNEYS
Control	47	294± 34	0.071± 0.009	0.169± 0.191	0.891± 0.071	1.028± 0.073	1.941± 0.160
7500 ppm	39	293± 31	0.094± 0.104	0.220± 0.450	0.905± 0.052	1.122± 0.301	1.981± 0.223
15000 ppm	35	276± 38*	0.077± 0.020	0.384± 1.322	0.872± 0.063	1.039± 0.096	2.013± 0.215
30000 ppm	14	258± 20**	0.072± 0.007	0.135± 0.024	0.863± 0.045	1.083± 0.325	2.043± 0.146

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

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN		LIVER		BRAIN	
Control	47	0.646±	0.348	7.667±	1.118	1.839±	0.056
7500 ppm	39	0.801±	0.912	7.560±	1.041	1.835±	0.060
15000 ppm	35	0.652±	0.327	7.330±	0.987	1.829±	0.036
30000 ppm	14	0.803±	0.924	7.202±	1.142	1.836±	0.053

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

APPENDIX J 3

ORGAN WEIGHT, ABSOLUTE (TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight	ADRENALS	TESTES	HEART	LUNGS	KIDNEYS
Control	34	45.2± 8.5	0.013± 0.009	0.224± 0.073	0.224± 0.046	0.250± 0.153	0.719± 0.414
10000 ppm	35	48.0± 5.0	0.012± 0.003	0.224± 0.044	0.212± 0.017	0.222± 0.064	0.644± 0.043
20000 ppm	30	43.5± 8.3	0.010± 0.004	0.202± 0.035	0.207± 0.028	0.261± 0.148	0.719± 0.491
40000 ppm	25	42.9± 9.3	0.012± 0.004	0.208± 0.037	0.195± 0.025**	0.211± 0.025	0.633± 0.079

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN		LIVER		BRAIN	
Control	34	0.214±	0.528	1.883±	0.615	0.458±	0.015
10000 ppm	35	0.119±	0.197	1.910±	0.686	0.453±	0.016
20000 ppm	30	0.189±	0.263	2.060±	0.907	0.455±	0.015
40000 ppm	25	0.123±	0.110	1.741±	0.466	0.449±	0.019

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

APPENDIX J 4

ORGAN WEIGHT, ABSOLUTE (TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight	ADRENALS	OVARIES	HEART	LUNGS	KIDNEYS
Control	29	32.7± 4.2	0.012± 0.003	0.035± 0.038	0.162± 0.019	0.196± 0.022	0.426± 0.044
10000 ppm	24	31.5± 4.1	0.013± 0.003	0.093± 0.242	0.163± 0.020	0.212± 0.031	0.438± 0.037
20000 ppm	19	32.5± 2.7	0.013± 0.003	0.058± 0.136	0.183± 0.075	0.223± 0.069*	0.475± 0.090
40000 ppm	28	31.4± 4.2	0.013± 0.004	0.076± 0.162	0.163± 0.022	0.221± 0.067*	0.499± 0.181**

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: g

ORGAN WEIGHT:ABSOLUTE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN		LIVER		BRAIN	
Control	29	0.151±	0.167	1.464±	0.232	0.487±	0.070
10000 ppm	24	0.174±	0.147	1.453±	0.166	0.478±	0.018
20000 ppm	19	0.175±	0.103	1.752±	0.619	0.481±	0.024
40000 ppm	28	0.211±	0.163	1.767±	1.110	0.470±	0.024

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

APPENDIX K 1

ORGAN WEIGHT, RELATIVE (TOW-YEAR STUDY: SUMMARY)

RAT : MALE

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight (g)	ADRENALS	TESTES	HEART	LUNGS	KIDNEYS
Control	38	420± 50	0.023± 0.019	0.989± 0.337	0.298± 0.042	0.352± 0.047	0.756± 0.200
7500 ppm	39	418± 34	0.020± 0.005	1.068± 0.352	0.296± 0.037	0.360± 0.058	0.758± 0.144
15000 ppm	34	403± 38	0.043± 0.133	1.200± 0.362*	0.298± 0.032	0.376± 0.045*	0.771± 0.151
30000 ppm	30	378± 40**	0.022± 0.009	1.296± 0.425**	0.305± 0.039	0.409± 0.154*	0.744± 0.078

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

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN	LIVER	BRAIN
Control	38	0.282± 0.093	3.203± 0.543	0.490± 0.066
7500 ppm	39	0.391± 0.553	3.287± 0.638	0.485± 0.041
15000 ppm	34	0.304± 0.069	3.193± 0.394	0.503± 0.048
30000 ppm	30	0.377± 0.312	3.277± 1.421	0.536± 0.059**

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

APPENDIX K 2

ORGAN WEIGHT, RELATIVE (TOW-YEAR STUDY: SUMMARY)

RAT : FEMALE

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight (g)	ADRENALS	OVARIES	HEART	LUNGS	KIDNEYS
Control	47	294± 34	0.024± 0.003	0.058± 0.067	0.306± 0.033	0.353± 0.041	0.666± 0.068
7500 ppm	39	293± 31	0.033± 0.038	0.072± 0.131	0.312± 0.035	0.395± 0.167	0.686± 0.123
15000 ppm	35	276± 38*	0.028± 0.008**	0.158± 0.584	0.321± 0.050	0.385± 0.084	0.741± 0.122**
30000 ppm	14	258± 20**	0.028± 0.003**	0.052± 0.009	0.336± 0.030**	0.421± 0.126**	0.794± 0.061**

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

STUDY NO. : 0224
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN	LIVER	BRAIN
Control	47	0.220± 0.112	2.622± 0.363	0.635± 0.090
7500 ppm	39	0.288± 0.370	2.611± 0.477	0.635± 0.084
15000 ppm	35	0.246± 0.166	2.690± 0.485	0.676± 0.107
30000 ppm	14	0.313± 0.358	2.784± 0.346	0.714± 0.051**

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

APPENDIX K 3

ORGAN WEIGHT, RELATIVE (TOW-YEAR STUDY: SUMMARY)

MOSUE : MALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight (g)	ADRENALS	TESTES	HEART	LUNGS	KIDNEYS
Control	34	45.2± 8.5	0.031± 0.033	0.506± 0.153	0.518± 0.176	0.613± 0.601	1.699± 1.381
10000 ppm	35	48.0± 5.0	0.024± 0.007	0.470± 0.103	0.447± 0.060	0.472± 0.174	1.354± 0.162
20000 ppm	30	43.5± 8.3	0.024± 0.009	0.482± 0.140	0.491± 0.100	0.651± 0.542	1.708± 1.248
40000 ppm	25	42.9± 9.3	0.029± 0.015	0.501± 0.106	0.474± 0.112	0.515± 0.123	1.528± 0.299

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN	LIVER	BRAIN
Control	34	0.540± 1.476	4.370± 1.963	1.054± 0.233
10000 ppm	35	0.273± 0.539	4.053± 1.695	0.954± 0.107
20000 ppm	30	0.461± 0.641	5.087± 3.264	1.094± 0.280
40000 ppm	25	0.307± 0.293	4.346± 1.957	1.104± 0.287

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

APPENDIX K 4

ORGAN WEIGHT, RELATIVE (TOW-YEAR STUDY: SUMMARY)

MOSUE : FEMALE

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	Body Weight (g)	ADRENALS	OVARIES	HEART	LUNGS	KIDNEYS
Control	29	32.7± 4.2	0.038± 0.010	0.109± 0.123	0.502± 0.086	0.607± 0.094	1.318± 0.194
10000 ppm	24	31.5± 4.1	0.042± 0.010	0.302± 0.812*	0.527± 0.095	0.689± 0.152	1.415± 0.220
20000 ppm	19	32.5± 2.7	0.040± 0.009	0.169± 0.368	0.565± 0.228	0.688± 0.210	1.469± 0.272*
40000 ppm	28	31.4± 4.2	0.042± 0.012	0.248± 0.557	0.523± 0.061	0.721± 0.263*	1.642± 0.855**

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

STUDY NO. : 0225
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE
UNIT: %

ORGAN WEIGHT:RELATIVE (SUMMARY)
SURVIVAL ANIMALS (105W)

Group Name	NO. of Animals	SPLEEN	LIVER	BRAIN
Control	29	0.457± 0.480	4.528± 0.839	1.535± 0.492
10000 ppm	24	0.572± 0.526	4.676± 0.743	1.544± 0.213
20000 ppm	19	0.544± 0.317	5.397± 1.829	1.492± 0.146
40000 ppm	28	0.694± 0.586	5.529± 2.579**	1.514± 0.167

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