テトラクロロエチレンのラット及びマウスを用いた
吸 入 に よ る が ん 原 性 試 験 報 告 書

APPENDIX

(L1～T2)

がん原性試験 NO.　0104 ; 0105

APPENDIXES (CONTINUED)

APPENDIX	L 1	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, RAT: MALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)
APPENDIX	L 2	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, RAT: FEMALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)
APPENDIX	L 3	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, RAT: MALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	L 4	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, RAT: FEMALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	L 5	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, MOUSE: MALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)
APPENDIX	L 6	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, MOUSE: FEMALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)
APPENDIX	L 7	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, MOUSE: MALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	L 8	HISTOLOGICAL FINDINGS: NON-NEOPLASTIC LESIONS: SUMMARY, MOUSE: FEMALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	M1	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, RAT: MALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)
APPENDIX	M2	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, RAT: FEMALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)
APPENDIX	M3	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, RAT: MALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	M4	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, RAT: FEMALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	M5	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, MOUSE: MALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)

APPENDIXES (CONTINUED)

APPENDIX	M6	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, MOUSE: FEMALE: DEAD AND MORIBUND ANIMALS (2-YEAR STUDY)
APPENDIX	M7	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, MOUSE: MALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	M8	HISTOLOGICAL FINDINGS: NEOPLASTIC LESIONS: SUMMARY, MOUSE: FEMALE: SACRIFICED ANIMALS (2-YEAR STUDY)
APPENDIX	N1	NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED: RAT: MALE (2-YEAR STUDY)
APPENDIX	N2	NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED: RAT: FEMALE (2-YEAR STUDY)
APPENDIX	N3	NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED: MOUSE: MALE (2-YEAR STUDY)
APPENDIX	N4	NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED: MOUSE: FEMALE (2-YEAR STUDY)
APPENDIX	O1	NEOPLASTIC LESIONS-INCIDENCE AND TIMU OF TUMOR OCCURRENCE RAT: MALE
APPENDIX	O2	NEOPLASTIC LESIONS-INCIDENCE AND TIMU OF TUMOR OCCURRENCE RAT: FEMALE
APPENDIX	O3	NEOPLASTIC LESIONS-INCIDENCE AND TIMU OF TUMOR OCCURRENCE MOUSE RAT: MALE
APPENDIX	O4	NEOPLASTIC LESIONS-INCIDENCE AND TIMU OF TUMOR OCCURRENCE MOUSE RAT: FEMALE
APPENDIX	P1	NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS: RAT: MALE (2-YEAR STUDY)
APPENDIX	P2	NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS: RAT: FEMALE (2-YEAR STUDY)
APPENDIX	P3	NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS: MOUSE: MALE (2-YEAR STUDY)
APPENDIX	P4	NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS: MOUSE: FEMALE (2-YEAR STUDY)
APPENDIX	Q1	IDENTITY AND PURITY OF TETRACHLOROETHYENE PERFORMED AT THE JAPANBIOASSAY LABORATORY (2 - YEAR STUDY)

APPENDIXES (CONTINUED)

APPENDIX	Q 2	STABILITY OF TETRACHLOROETHYENE AT THE JAPAN BIOASSAY LABORATORY (2 - YEAR STUDY)
APPENDIX	R1	CONCENTRATION OF TETRACHLOROETHYENE IN INHALATION CHAMBER (2 - YEAR STUDY)
APPENDIX	R2	ENVIRONMENT OF INHALATION CHAMBER (2 - YEAR STUDY)
APPENDIX	S1	NUTRIENTS IN RAT AND MOUSE FEED
APPENDIX	S2	CONTAMINANTS IN RAT AND MOUSE FEED
APPENDIX	T1	METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS
APPENDIX	T2	UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

APPENDIX L 1

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : DEAD AND MORIBUND ANIMALS

(2-YEAR STUDY)

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	13				16				20				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Integumentary system/appandage]																		
skin/app	epidermal cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Respiratory system]																		
nasal cavit	thrombus		1 (8)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	5 (25)	0 (0)	0 (0)	0 (0)	11 (50)	0 (0)	0 (0)	0 * (0)
	eosinophilic change:olfactory epithelium		1 (8)	0 (0)	0 (0)	0 (0)	1 (6)	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		2 (15)	1 (8)	0 (0)	0 (0)	2 (13)	1 (6)	0 (0)	0 (0)	3 (15)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)
	inflammation:foreign body		2 (15)	3 (23)	2 (15)	0 (0)	1 (6)	3 (19)	1 (6)	1 (6)	3 (15)	2 (10)	2 (10)	0 (0)	1 (5)	4 (18)	1 (5)	0 (0)
larynx	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
lung	congestion		1 (8)	3 (23)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	5 (25)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	0 (0)
	hemorrhage		0 (0)	1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)
	interstitial penumonia		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow	atrophy		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / No. of Animals	Control 13				50 ppm 16				200 ppm 20				600 ppm 22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
bone marrow	granulation		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	myelofibrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	reticulosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
spleen	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of hemosiderin		1 (8)	2 (15)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (9)	1 (5)	0 (0)	0 (0)
	fibrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	2 (9)	0 (0)	0 (0)
	extramedullary hematopoiesis		2 (15)	0 (0)	1 (8)	0 (0)	3 (19)	2 (13)	1 (6)	0 (0)	6 (30)	0 (0)	0 (0)	0 (0)	1 (5)	2 (9)	2 (9)	0 (0)
[Circulatory system]																		
heart	dilatation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)
	mineralization		1 (8)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	myocardial fibrosis		4 (31)	1 (8)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	8 (40)	0 (0)	0 (0)	0 (0)	8 (36)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	13				16				20				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Circulatory system]																		
artery/aort	mineralization:artery		1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
tooth	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
stomach	congestion		1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization		0 (0)	0 (0)	1 (8)	0 (0)	1 (6)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	ulcer:forestomach		2 (15)	2 (15)	0 (0)	1 (8)	1 (6)	1 (6)	0 (0)	0 (0)	2 (10)	3 (15)	0 (0)	0 (0)	3 (14)	4 (18)	0 (0)	0 (0)
	hyperplasia:forestomach		3 (23)	1 (8)	0 (0)	0 (0)	2 (13)	1 (6)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	5 (23)	2 (9)	0 (0)	0 (0)
	erosion:glandular stomach		3 (23)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	3 (15)	0 (0)	0 (0)	0 (0)	6 (27)	0 (0)	0 (0)	0 (0)
	ulcer:glandular stomach		2 (15)	0 (0)	0 (0)	0 (0)	1 (6)	3 (19)	0 (0)	0 (0)	3 (15)	1 (5)	0 (0)	0 (0)	2 (9)	2 (9)	0 (0)	0 (0)
small intes	ulcer		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)
large intes	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)

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

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	13				16				20				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	necrosis:central		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	1 (6)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	fatty change		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	1 (6)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	hyperplasia		1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (18)	2 (9)	0 (0)	0 (0)
	acidophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	basophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	vacuolated cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	spongiosis hepatis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	1 (5)	3 (14)	0 (0)	0 (0)
	bile duct hyperplasia		10 (77)	3 (23)	0 (0)	0 (0)	14 (88)	1 (6)	0 (0)	0 (0)	16 (80)	1 (5)	0 (0)	0 (0)	14 (64)	2 (9)	0 (0)	0 (0)
	vacuolic change:peripheral		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
pancreas	atrophy		1 (8)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	hyperplasia:tubular epithelial cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	13				16				20				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	atypical tubular dilatation:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (23)	1 (5)	0 (0)	0 (0)
	chronic nephropathy		0 (0)	1 (8)	9 (69)	2 (15)	4 (25)	3 (19)	1 (6)	4 (25) **	4 (20)	4 (20)	6 (30)	4 (20)	1 (5)	2 (9)	10 (45)	7 (32)
	tubular necrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	papillary necrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (25)	0 (0)	0 (0)	0 (0)	6 (27)	14 (64)	0 (0)	0 (0) **
[Endocrine system]																		
pituitary	cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)
thyroid	follicular hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	C-cell hyperplasia		1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
parathyroid	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / No. of Animals	Control 13				50 ppm 16				200 ppm 20				600 ppm 22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Endocrine system]																		
adrenal	hyperplasia:cortical cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	hyperplasia:medulla		0 (0)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	3 (15)	0 (0)	0 (0)	0 (0)	4 (18)	2 (9)	0 (0)	0 (0)
	focal fatty change:cortex		2 (15)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
testis	atrophy		9 (69)	0 (0)	0 (0)	0 (0)	7 (44)	0 (0)	0 (0)	0 (0)	13 (65)	0 (0)	0 (0)	0 (0)	9 (41)	0 (0)	0 (0)	0 (0)
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
semin ves	granulation		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
prostate	inflammation		1 (8)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	0 (0)
	granulation		1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia		2 (15)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
mammary gl	duct ectasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	13				16				20				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Nervous system]																		
brain	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyaline body		3 (23)	0 (0)	0 (0)	0 (0)	5 (31)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	5 (23)	0 (0)	0 (0)	0 (0)
	osseous metaplasia		0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spinal cord	gliosis		0 (0)	1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
eye	cataract		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	retinal atrophy		1 (8)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	keratitis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hemorrhage:retina		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	1 (5)	0 (0)
Harder gl	degeneration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Musculoskeletal system]																		
muscle	necrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (18)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	13				16				20				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Musculoskeletal system]																		
bone	ostitis fibrosa		2 (15)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Body cavities]																		
adipose	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (18)	0 (0)	0 (0)	0 (0)

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

APPENDIX L 2

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE : DEAD AND MORIBUND ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	8				16				16				16			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Integumentary system/appandage]																		
skin/app	epidermal cyst		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Respiratory system]																		
nasal cavit	thrombus		3 (38)	0 (0)	0 (0)	0 (0)	5 (31)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	6 (38)	0 (0)	0 (0)	0 (0)
	eosinophilic change:olfactory epithelium		2 (25)	2 (25)	0 (0)	0 (0)	1 (6)	3 (19)	3 (19)	1 (6)	6 (38)	1 (6)	0 (0)	0 (0)	2 (13)	1 (6)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium		4 (50)	3 (38)	0 (0)	0 (0)	5 (31)	1 (6)	0 (0)	0 * (0)	10 (63)	0 (0)	0 (0)	0 * (0)	5 (31)	1 (6)	0 (0)	0 * (0)
	inflammation:foreign body		1 (13)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	3 (19)	2 (13)	0 (0)	0 (0)
lung	congestion		1 (13)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	necrosis:focal		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	inflammation		1 (13)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	osseous metaplasia		1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	accumulation of foamy cells		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	8				16				16				16			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
lung	infiltration:alveolar macrophage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow	atrophy		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lymph node	granulation		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	lymphadenitis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)
spleen	deposit of hemosiderin		3 (38)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	1 (6)
	fibrosis		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		0 (0)	0 (0)	0 (0)	0 (0)	3 (19)	1 (6)	0 (0)	0 (0)	1 (6)	3 (19)	1 (6)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
[Circulatory system]																		
heart	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	8				16				16				16			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Circulatory system]																		
heart	myocardial fibrosis		1 (13)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
stomach	ulcer:forestomach		1 (13)	2 (25)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	2 (13)	3 (19)	0 (0)	0 (0)	1 (6)	2 (13)	1 (6)	0 (0)
	hyperplasia:forestomach		2 (25)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	4 (25)	2 (13)	0 (0)	0 (0)
	erosion:glandular stomach		1 (13)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)
	ulcer:glandular stomach		1 (13)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	6 (38)	0 (0)	0 (0)	0 (0)
small intes	ulcer		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
large intes	ulcer		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)
liver	necrosis:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	1 (6)	1 (6)	0 (0)	0 (0)
	fatty change		1 (13)	1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	1 (6)	0 (0)	0 (0)
	degeneration:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		3 (38)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 * (0)	0 (0)	0 (0)	0 (0)	0 * (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	8				16				16				16			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	basophilic cell focus		1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mixed cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	bile duct hyperplasia		3 (38)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 * (0)	1 (6)	0 (0)	0 (0)	0 (0)
	cholangiofibrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
pancreas	atrophy		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	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	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	chronic nephropathy		4 (50)	0 (0)	1 (13)	1 (13)	10 (63)	2 (13)	1 (6)	0 (0)	6 (38)	2 (13)	1 (6)	0 (0)	5 (31)	3 (19)	2 (13)	1 (6)
	glomerulosclerosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	cyst		1 (13)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	8				16				16				16			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Endocrine system]																		
pituitary	hyperplasia		1 (13)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)
thyroid	C-cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
adrenal	peliosis-like lesion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	necrosis		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)
	hyperplasia:cortical cell		0 (0)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia:medulla		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)
	focal fatty change:cortex		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
uterus	cystic endometrial hyperplasia		1 (13)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	2 (13)	1 (6)	0 (0)	0 (0)
mammary gl	duct ectasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	hyperplasia		1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	8				16				16				16			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Nervous system]																		
brain	necrosis:focal		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	hyaline body		2 (25)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)
spinal cord	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	necrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)
[Special sense organs/appandage]																		
eye	cataract		0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)
	retinal atrophy		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)
	degeneration:cornea		1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	hemorrhage:retina		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
Harder gl	inflammation		1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Musculoskeletal system]																		
bone	osteosclerosis		0 (0)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	8				16				16				16			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Body cavities]																		
adipose	granulation		1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

APPENDIX L 3

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	37				34				30				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Integumentary system/appandage]																		
skin/app	abscess		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	epidermal cyst		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
[Respiratory system]																		
nasal cavit	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	eosinophilic change:olfactory epithelium		3 (8)	3 (8)	0 (0)	0 (0)	4 (12)	2 (6)	4 (12)	0 (0)	2 (7)	1 (3)	0 (0)	0 (0)	2 (7)	2 (7)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium		11 (30)	1 (3)	0 (0)	0 (0)	12 (35)	4 (12)	0 (0)	0 (0)	6 (20)	4 (13)	0 (0)	0 (0)	4 (14)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	inflammation:foreign body		10 (27)	3 (8)	1 (3)	1 (3)	1 (3)	8 (24)	1 (3)	1 * (3)	4 (13)	5 (17)	4 (13)	1 (3)	5 (18)	5 (18)	2 (7)	0 (0)
lung	hemorrhage		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	osseous metaplasia		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow	granulation		0 (0)	1 (3)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	37				34				30				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
bone marrow	reticulosis		0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lymph node	ectasia of sinus		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	lymphadenitis		2 (5)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	4 (13)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
thymus	osseous metaplasia		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spleen	deposit of hemosiderin		4 (11)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	granulation		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	fibrosis		2 (5)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		12 (32)	1 (3)	0 (0)	0 (0)	5 (15)	1 (3)	0 (0)	0 (0)	2 (7)	1 (3)	0 (0)	0 * (0)	1 (4)	1 (4)	0 (0)	0 * (0)
[Circulatory system]																		
heart	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	37				34				30				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Circulatory system]																		
heart	fibrosis		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	myocardial fibrosis		17 (46)	0 (0)	0 (0)	0 (0)	20 (59)	0 (0)	0 (0)	0 (0)	12 (40)	1 (3)	0 (0)	0 (0)	17 (61)	0 (0)	0 (0)	0 (0)
	arteritis		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
artery/aort	arteritis		3 (8)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
stomach	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	ulcer:forestomach		0 (0)	1 (3)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	hyperplasia:forestomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)
	erosion:glandular stomach		2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
	ulcer:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
large intes	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
liver	herniation		1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 37				50 ppm 34				200 ppm 30				600 ppm 28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	fatty change		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		2 (5)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia		1 (3)	2 (5)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	3 (10)	2 (7)	0 (0)	0 (0)	6 (21)	1 (4)	1 (4)	0 (0)
	clear cell focus		3 (8)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	acidophilic cell focus		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	basophilic cell focus		4 (11)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)
	vacuolated cell focus		0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mixed cell focus		3 (8)	1 (3)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	spongiosis hepatis		5 (14)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	7 (23)	1 (3)	0 (0)	0 (0)	11 (39)	1 (4)	0 (0)	0 * (0)
	bile duct hyperplasia		28 (76)	9 (24)	0 (0)	0 (0)	33 (97)	1 (3)	0 (0)	0 * (0)	30 (100)	0 (0)	0 (0)	0 * (0)	25 (89)	2 (7)	0 (0)	0 (0)
pancreas	atrophy		9 (24)	2 (5)	0 (0)	0 (0)	8 (24)	1 (3)	0 (0)	0 (0)	5 (17)	0 (0)	0 (0)	0 (0)	4 (14)	0 (0)	0 (0)	0 (0)
	hyperplasia:acinar cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 37				50 ppm 34				200 ppm 30				600 ppm 28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	hyperplasia:tubular epithelial cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	atypical tubular dilatation:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	14 (50)	4 (14)	0 (0)	0 (0) **
	chronic nephropathy		1 (3)	7 (19)	17 (46)	12 (32)	3 (9)	3 (9)	13 (38)	14 (41)	0 (0)	3 (10)	18 (60)	9 (30)	0 (0)	0 (0)	8 (29)	20 (71) **
	hydronephrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	renal dysgenesis		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	18 (60)	0 (0)	0 (0)	0 (0) **	2 (7)	26 (93)	0 (0)	0 (0) **
urin bladd	inflammatory cell nest		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	cyst		3 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)
	hyperplasia		9 (24)	1 (3)	0 (0)	0 (0)	7 (21)	1 (3)	0 (0)	0 (0)	7 (23)	1 (3)	0 (0)	0 (0)	5 (18)	0 (0)	0 (0)	0 (0)
	Rathke pouch		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
thyroid	ultimibranchial body remanet		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 37				50 ppm 34				200 ppm 30				600 ppm 28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Endocrine system]																		
thyroid	follicular hyperplasia		1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	C-cell hyperplasia		1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
parathyroid	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	cyst		1 (3)	0 (0)	0 (0)	0 (0)	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:cortical cell		4 (11)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
	hyperplasia:medulla		2 (5)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	5 (17)	0 (0)	0 (0)	0 (0)	4 (14)	0 (0)	0 (0)	0 (0)
	accesory cortical nodule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	focal fatty change:cortex		8 (22)	1 (3)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	4 (13)	0 (0)	0 (0)	0 (0)	6 (21)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
testis	atrophy		22 (59)	0 (0)	0 (0)	0 (0)	14 (41)	0 (0)	0 (0)	0 (0)	20 (67)	0 (0)	0 (0)	0 (0)	15 (54)	0 (0)	0 (0)	0 (0)
prostate	inflammation		1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		3 (8)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	37				34				30				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Reproductive system]																		
prostate	hyperplasia		10 (27)	0 (0)	0 (0)	0 (0)	6 (18)	0 (0)	0 (0)	0 (0)	6 (20)	0 (0)	0 (0)	0 (0)	6 (21)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain	hyaline body		11 (30)	0 (0)	0 (0)	0 (0)	7 (21)	0 (0)	0 (0)	0 (0)	8 (27)	0 (0)	0 (0)	0 (0)	6 (21)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
eye	cataract		1 (3)	1 (3)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	retinal atrophy		0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	keratitis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	degeneration:cornea		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Harder gl	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Musculoskeletal system]																		
muscle	necrosis		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
bone	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	37				34				30				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Musculoskeletal system]																		
bone	osteosclerosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
[Body cavities]																		
adipose	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

APPENDIX L 4

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	42				34				34				34			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
nasal cavit	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	eosinophilic change:olfactory epithelium		4 (10)	9 (21)	9 (21)	0 (0)	4 (12)	12 (35)	8 (24)	3 (9)	8 (24)	15 (44)	4 (12)	1 * (3)	7 (21)	9 (26)	4 (12)	0 (0)
	eosinophilic change:respiratory epithelium		19 (45)	7 (17)	0 (0)	0 (0)	14 (41)	10 (29)	3 (9)	0 (0)	28 (82)	1 (3)	0 (0)	0 ** (0)	16 (47)	2 (6)	0 (0)	0 (0)
	inflammation:foreign body		4 (10)	9 (21)	0 (0)	0 (0)	5 (15)	2 (6)	1 (3)	0 (0)	10 (29)	1 (3)	0 (0)	0 * (0)	6 (18)	0 (0)	0 (0)	0 * (0)
lung	hemorrhage		1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow	granulation		3 (7)	0 (0)	0 (0)	0 (0)	4 (12)	1 (3)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	7 (21)	0 (0)	0 (0)	0 (0)
	reticulosis		0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
lymph node	granulation		2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	lymphadenitis		1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spleen	deposit of hemosiderin		7 (17)	0 (0)	0 (0)	0 (0)	7 (21)	0 (0)	0 (0)	0 (0)	6 (18)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	42				34				34				34			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
spleen	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	fibrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		6 (14)	0 (0)	0 (0)	0 (0)	5 (15)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Circulatory system]																		
heart	fibrosis		2 (5)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	myocardial fibrosis		8 (19)	0 (0)	0 (0)	0 (0)	6 (18)	0 (0)	0 (0)	0 (0)	9 (26)	0 (0)	0 (0)	0 (0)	8 (24)	0 (0)	0 (0)	0 (0)
	endocardial hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
artery/aort	arteritis		1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
esophagus	inflammation		1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
stomach	ulcer:forestomach		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia:forestomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	42				34				34				34			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
stomach	erosion:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
liver	herniation		4 (10)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)
	necrosis:focal		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		7 (17)	3 (7)	1 (2)	0 (0)	6 (18)	1 (3)	0 (0)	0 (0)	13 (38)	1 (3)	0 (0)	0 (0)	7 (21)	3 (9)	0 (0)	0 (0)
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	clear cell focus		1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	basophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	vacuolated cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)
	mixed cell focus		2 (5)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	bile duct hyperplasia		5 (12)	0 (0)	0 (0)	0 (0)	5 (15)	0 (0)	0 (0)	0 (0)	6 (18)	1 (3)	0 (0)	0 (0)	11 (32)	0 (0)	0 (0)	0 (0)
pancreas	atrophy		4 (10)	1 (2)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)
	hyperplasia:acinar cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	42				34				34				34			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	hyperplasia:tubular epithelial cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization		1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	chronic nephropathy		12 (29)	17 (40)	5 (12)	4 (10)	12 (35)	13 (38)	5 (15)	2 (6)	11 (32)	13 (38)	6 (18)	3 (9)	11 (32)	12 (35)	6 (18)	3 (9)
	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	14 (41)	0 (0)	0 (0)	0 (0) **
[Endocrine system]																		
pituitary	cyst		7 (17)	1 (2)	0 (0)	0 (0)	5 (15)	1 (3)	0 (0)	0 (0)	7 (21)	0 (0)	0 (0)	0 (0)	10 (29)	3 (9)	0 (0)	0 (0)
	hyperplasia		11 (26)	2 (5)	0 (0)	0 (0)	5 (15)	1 (3)	0 (0)	0 (0)	8 (24)	0 (0)	0 (0)	0 (0)	7 (21)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
thyroid	C-cell hyperplasia		3 (7)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
parathyroid	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	peliosis-like lesion		0 (0)	0 (0)	0 (0)	0 (0)	3 (9)	1 (3)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	cyst		0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	42				34				34				34			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Endocrine system]																		
adrenal	hyperplasia:cortical cell		1 (2)	1 (2)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	2 (6)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia:medulla		2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)
	accesory cortical nodule		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	focal fatty change:cortex		5 (12)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	8 (24)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
uterus	cystic endometrial hyperplasia		2 (5)	3 (7)	0 (0)	0 (0)	4 (12)	1 (3)	0 (0)	0 (0)	5 (15)	2 (6)	0 (0)	0 (0)	7 (21)	1 (3)	0 (0)	0 (0)
mammary gl	duct ectasia		1 (2)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain	hemorrhage		2 (5)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)
	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	hyaline body		16 (38)	0 (0)	0 (0)	0 (0)	16 (47)	0 (0)	0 (0)	0 (0)	10 (29)	0 (0)	0 (0)	0 (0)	8 (24)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				50 ppm				200 ppm				600 ppm			
		No. of Animals	42				34				34				34			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Special sense organs/appandage]																		
eye	cataract		2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	1 (3)	0 (0)
	retinal atrophy		0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	3 (9)	0 (0)
	degeneration:cornea		1 (2)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)
	hemorrhage:retina		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Harder gl	degeneration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
[Musculoskeletal system]																		
bone	osteosclerosis		0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
[Body cavities]																		
adipose	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)

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

APPENDIX L 5

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : DEAD AND MORIBUND ANIMALS

MOSUE (2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Integumentary system/appandage]																		
skin/app	inflammation		1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)
	abscess		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
subcutis	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
[Respiratory system]																		
nasal cavit	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)	1 (4)	0 (0)	0 (0)
	hemorrhage		0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	eosinophilic change:olfactory epithelium		4 (21)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 * (0)
	eosinophilic change:respiratory epithelium		2 (11)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium		6 (32)	0 (0)	0 (0)	0 (0)	6 (40)	0 (0)	0 (0)	0 (0)	4 (18)	0 (0)	0 (0)	0 (0)	5 (18)	1 (4)	0 (0)	0 (0)
	respiratory metaplasia:gland		8 (42)	5 (26)	0 (0)	0 (0)	6 (40)	3 (20)	0 (0)	0 (0)	6 (27)	3 (14)	0 (0)	0 (0)	9 (32)	2 (7)	0 (0)	0 (0)
nasopharynx	eosinophilic change		0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
larynx	lymphocytic infiltration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 19				10 ppm 15				50 ppm 22				250 ppm 28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
lung	congestion		0 (0)	2 (11)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
	edema		0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
	inflammation		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	lymphocytic infiltration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
[Hematopoietic system]																		
bone marrow	vascular		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	myelofibrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lymph node	deposit of hemosiderin		3 (16)	0 (0)	0 (0)	0 (0)	3 (20)	1 (7)	0 (0)	0 (0)	3 (14)	1 (5)	0 (0)	0 (0)	11 (39)	2 (7)	0 (0)	0 (0)
thymus	atrophy		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spleen	atrophy		0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
spleen	congestion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
	deposit of amyloid		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of hemosiderin		2 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	osseous 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)	1 (4)	0 (0)	0 (0)
	extramedullary hematopoiesis		3 (16)	3 (16)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	8 (36)	5 (23)	0 (0)	0 (0)	7 (25)	6 (21)	1 (4)	0 (0)
	follicular hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)
[Circulatory system]																		
heart	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	necrosis:focal		1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization		1 (5)	1 (5)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	0 (0)	4 (14)	0 (0)	0 (0)	0 (0)
	myocarditis		0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	1 (7)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	arteritis		0 (0)	1 (5)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Circulatory system]																		
artery/aort	arteritis		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
tooth	inflammation		1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	dysplasia		7 (37)	1 (5)	0 (0)	0 (0)	3 (20)	1 (7)	1 (7)	0 (0)	8 (36)	1 (5)	1 (5)	0 (0)	5 (18)	0 (0)	0 (0)	0 (0)
tongue	arteritis		0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
stomach	hyperplasia:glandular stomach		2 (11)	0 (0)	0 (0)	0 (0)	2 (13)	1 (7)	0 (0)	0 (0)	2 (9)	1 (5)	0 (0)	0 (0)	3 (11)	4 (14)	0 (0)	0 (0)
liver	angiectasis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	1 (5)	1 (5)	2 (9)	0 (0)	2 (7)	5 (18)	5 (18)	0 * (0)
	infarct		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	necrosis:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)
	necrosis:focal		0 (0)	1 (5)	1 (5)	0 (0)	1 (7)	0 (0)	2 (13)	0 (0)	2 (9)	3 (14)	3 (14)	0 (0)	3 (11)	4 (14)	1 (4)	0 (0)
	fatty change		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	deposit of amyloid		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	deposit of hemosiderin		1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	degeneration:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	9 (32)	6 (21)	1 (4)	0 (0) **
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	fibrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	clear cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	basophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
	vacuolic change:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
pancreas	granulation		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	organization		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	atypical tubular dilatation:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	infarct		1 (5)	0 (0)	1 (5)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	hyaline droplet		1 (5)	2 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of amyloid		0 (0)	0 (0)	1 (5)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	suppurative inflammation		1 (5)	1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	2 (7)	1 (4)	0 (0)
	inflammatory polyp		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hydronephrosis		0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
	tubular necrosis		1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
	dilatation:tubular lumen		1 (5)	3 (16)	0 (0)	0 (0)	1 (7)	5 (33)	1 (7)	0 (0)	0 (0)	9 (41)	0 (0)	0 (0)	3 (11)	8 (29)	0 (0)	0 (0)
	glomerulosclerosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	22 (79)	4 (14)	0 (0)	0 (0) **
ureter	inflammatory polyp		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)
urin bladd	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
urethra	inflammation		0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	congestion		0 (0)	1 (5)	0 (0)	0 (0)	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		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)
thyroid	arteritis		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	congestion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of amyloid		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	spindle-cell hyperplasia		2 (11)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
testis	atrophy		2 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (11)	1 (4)	0 (0)	0 (0)
	hemorrhage		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Reproductive system]																		
testis	mineralization		3 (16)	0 (0)	0 (0)	0 (0)	4 (27)	0 (0)	0 (0)	0 (0)	7 (32)	0 (0)	0 (0)	0 (0)	13 (46)	0 (0)	0 (0)	0 (0)
epididymis	spermatogenic granuloma		1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
prostate	inflammation		1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	2 (9)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
prep/cli gl	duct ectasia		0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain	hemorrhage		3 (16)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	deposit of calcium		6 (32)	0 (0)	0 (0)	0 (0)	4 (27)	0 (0)	0 (0)	0 (0)	5 (23)	0 (0)	0 (0)	0 (0)	11 (39)	0 (0)	0 (0)	0 (0)
	hyaline body		6 (32)	0 (0)	0 (0)	0 (0)	6 (40)	0 (0)	0 (0)	0 (0)	6 (27)	0 (0)	0 (0)	0 (0)	15 (54)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
eye	keratitis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
Harder gl	atypical hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)
[Musculoskeletal system]																		
muscle	mineralization		2 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	19				15				22				28			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Musculoskeletal system]																		
bone	osteosclerosis		1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Body cavities]																		
pleura	pleuritis		0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adipose	granulation		0 (0)	4 (21)	0 (0)	0 (0)	1 (7)	2 (13)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)

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

APPENDIX L 6

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : FEMALE : DEAD AND MORIBUND ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name / No. of Animals	Control 18				10 ppm 20				50 ppm 27				250 ppm 33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
nasal cavit	eosinophilic change:olfactory epithelium		2 (11)	0 (0)	0 (0)	0 (0)	3 (15)	0 (0)	0 (0)	0 (0)	4 (15)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium		6 (33)	5 (28)	0 (0)	0 (0)	9 (45)	4 (20)	0 (0)	0 (0)	8 (30)	4 (15)	1 (4)	0 (0)	8 (24)	5 (15)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:gland		7 (39)	1 (6)	0 (0)	0 (0)	10 (50)	1 (5)	0 (0)	0 (0)	10 (37)	0 (0)	0 (0)	0 (0)	5 (15)	0 (0)	0 (0)	0 (0)
nasopharynx	eosinophilic change		0 (0)	1 (6)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
lung	congestion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	edema		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	inflammation		0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)
[Hematopoietic system]																		
bone marrow	vascular		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
	myelofibrosis		1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lymph node	Russel body		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	18				20				27				33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
lymph node	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	2 (6)	1 (3)	0 (0)	0 (0)
	granulation		0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	lymphadenitis		0 (0)	1 (6)	1 (6)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	2 (6)	0 (0)	0 (0)
thymus	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)	1 (3)	0 (0)	0 (0)	0 (0)
spleen	atrophy		0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
	deposit of hemosiderin		1 (6)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		5 (28)	3 (17)	0 (0)	0 (0)	3 (15)	5 (25)	2 (10)	0 (0)	4 (15)	1 (4)	1 (4)	0 (0)	8 (24)	11 (33)	0 (0)	0 (0)
[Circulatory system]																		
heart	thrombus		0 (0)	1 (6)	1 (6)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)
	necrosis:focal		1 (6)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
	mineralization		1 (6)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)
	myocarditis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	18				20				27				33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Circulatory system]																		
heart	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
[Digestive system]																		
tooth	dysplasia		3 (17)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	4 (15)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)
tongue	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
stomach	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	ulcer:forestomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia:forestomach		1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	erosion:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	ulcer:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	hyperplasia:glandular stomach		1 (6)	1 (6)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	4 (15)	0 (0)	0 (0)	0 (0)	3 (9)	2 (6)	0 (0)	0 (0)
small intes	deposit of amyloid		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
liver	angiectasis		0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	1 (3)	9 (27)	5 (15)	0 (0) **

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	18				20				27				33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	infarct		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	peliosis-like lesion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)
	necrosis:central		0 (0)	0 (0)	1 (6)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	necrosis:focal		0 (0)	2 (11)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	1 (3)	7 (21)	1 (3)	0 (0)
	cyst formation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	degeneration:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	7 (21)	7 (21)	1 (3)	0 (0) **
	inflammatory infiltration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)
	clear cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
pancreas	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	atypical tubular dilatation:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 18				10 ppm 20				50 ppm 27				250 ppm 33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	infarct		0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	vacuolic change		0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyaline droplet		0 (0)	3 (17)	5 (28)	0 (0)	1 (5)	4 (20)	3 (15)	1 (5)	0 (0)	5 (19)	2 (7)	0 (0)	0 (0)	3 (9)	2 (6)	0 (0)
	deposit of amyloid		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)
	lymphocytic infiltration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)
	suppurative inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	osseous metaplasia		1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	inflammatory polyp		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
	hydronephrosis		0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	1 (5)	1 (5)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	1 (3)
	tubular necrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
	dilatation:tubular lumen		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)
	glomerulosclerosis		0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 18				10 ppm 20				50 ppm 27				250 ppm 33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	24 (73)	7 (21)	0 (0)	0 ** (0)
ureter	inflammatory polyp		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
urin bladd	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	angiectasis		0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	hyperplasia		1 (6)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	3 (11)	1 (4)	0 (0)	0 (0)	5 (15)	0 (0)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	spindle-cell hyperplasia		15 (83)	1 (6)	0 (0)	0 (0)	17 (85)	1 (5)	0 (0)	0 (0)	25 (93)	0 (0)	0 (0)	0 (0)	30 (91)	3 (9)	0 (0)	0 (0)
	hyperplasia:cortical cell		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
ovary	angiectasis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	18				20				27				33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Reproductive system]																		
ovary	cyst		1 (6)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of amyloid		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
uterus	cystic endometrial hyperplasia		7 (39)	1 (6)	0 (0)	0 (0)	7 (35)	1 (5)	0 (0)	0 (0)	10 (37)	0 (0)	0 (0)	0 (0)	15 (45)	3 (9)	0 (0)	0 (0)
[Nervous system]																		
brain	hemorrhage		2 (11)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of calcium		2 (11)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	10 (37)	0 (0)	0 (0)	0 (0)	8 (24)	0 (0)	0 (0)	0 (0)
	hyaline body		9 (50)	0 (0)	0 (0)	0 (0)	9 (45)	0 (0)	0 (0)	0 (0)	14 (52)	0 (0)	0 (0)	0 (0)	17 (52)	0 (0)	0 (0)	0 (0)
spinal cord	hemorrhage		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	epidermal cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
eye	keratitis		2 (11)	0 (0)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)
Harder gl	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 18				10 ppm 20				50 ppm 27				250 ppm 33			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Special sense organs/appandage]																		
Harder gl	atypical hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)
[Musculoskeletal system]																		
muscle	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	1 (4)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)
bone	osteosclerosis		1 (6)	0 (0)	0 (0)	0 (0)	3 (15)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
[Body cavities]																		
adipose	granulation		0 (0)	1 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

APPENDIX L 7

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 31				10 ppm 35				50 ppm 28				250 ppm 22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Integumentary system/appandage]																		
skin/app	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Respiratory system]																		
nasal cavit	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	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		15 (48)	0 (0)	0 (0)	0 (0)	9 (26)	0 (0)	0 (0)	0 (0)	8 (29)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0) **
	eosinophilic change:respiratory epithelium		11 (35)	2 (6)	0 (0)	0 (0)	14 (40)	6 (17)	1 (3)	0 (0)	9 (32)	3 (11)	1 (4)	0 (0)	3 (14)	2 (9)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium		20 (65)	0 (0)	0 (0)	0 (0)	16 (46)	1 (3)	0 (0)	0 (0)	15 (54)	0 (0)	0 (0)	0 (0)	7 (32)	0 (0)	0 (0)	0 (0) *
	respiratory metaplasia:gland		6 (19)	19 (61)	3 (10)	0 (0)	13 (37)	19 (54)	1 (3)	0 (0)	8 (29)	12 (43)	1 (4)	0 (0)	11 (50)	2 (9)	0 (0)	0 (0) **
nasopharynx	eosinophilic change		3 (10)	1 (3)	0 (0)	0 (0)	3 (9)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)
lung	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow	mastcell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	31				35				28				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
bone marrow	myelofibrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lymph node	deposit of hemosiderin		8 (26)	0 (0)	0 (0)	0 (0)	8 (23)	0 (0)	0 (0)	0 (0)	7 (25)	0 (0)	0 (0)	0 (0)	4 (18)	1 (5)	0 (0)	0 (0)
	lymphadenitis		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
thymus	deposit of hemosiderin		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spleen	deposit of hemosiderin		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		5 (16)	3 (10)	0 (0)	0 (0)	4 (11)	3 (9)	1 (3)	0 (0)	3 (11)	3 (11)	0 (0)	0 (0)	9 (41)	9 (41)	0 (0)	0 (0) **
	follicular hyperplasia		0 (0)	2 (6)	0 (0)	0 (0)	4 (11)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	0 (0)
[Circulatory system]																		
heart	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	myocarditis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 31				10 ppm 35				50 ppm 28				250 ppm 22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
tooth	inflammation		2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	dysplasia		20 (65)	3 (10)	0 (0)	0 (0)	19 (54)	0 (0)	1 (3)	0 (0)	12 (43)	0 (0)	0 (0)	0 * (0)	4 (18)	1 (5)	0 (0)	0 ** (0)
tongue	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
salivary gl	mineralization		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	lymphocytic infiltration		2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	xanthogranuloma		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
stomach	hyperplasia:forestomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	erosion:glandular stomach		2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)
	ulcer:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia:glandular stomach		9 (29)	4 (13)	11 (35)	0 (0)	12 (34)	7 (20)	2 (6)	0 * (0)	11 (39)	5 (18)	4 (14)	0 (0)	5 (23)	6 (27)	0 (0)	0 ** (0)
small intes	deposit of amyloid		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)
liver	angiectasis		0 (0)	0 (0)	1 (3)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	2 (7)	4 (14)	2 (7)	0 * (0)	4 (18)	9 (41)	5 (23)	0 ** (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 31				10 ppm 35				50 ppm 28				250 ppm 22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	infarct		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	nuclear inclusion		2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	necrosis:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)
	necrosis:focal		1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (18)	1 (5)	0 (0)	0 (0)
	cyst formation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	degeneration:central		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (11)	1 (4)	0 (0)	0 (0)	7 (32)	13 (59)	1 (5)	0 ** (0)
	granulation		3 (10)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	hyperplasia		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)
	clear cell focus		2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (7)	1 (4)	0 (0)	0 (0)	2 (9)	3 (14)	0 (0)	0 (0)
	acidophilic cell focus		0 (0)	1 (3)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	basophilic cell focus		1 (3)	1 (3)	0 (0)	0 (0)	2 (6)	1 (3)	0 (0)	0 (0)	4 (14)	0 (0)	0 (0)	0 (0)	2 (9)	1 (5)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 31				10 ppm 35				50 ppm 28				250 ppm 22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
pancreas	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)
[Urinary system]																		
kidney	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)	1 (5)	0 (0)
	infarct		2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	cyst		2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyaline droplet		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	basophilic change		2 (6)	1 (3)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)
	deposit of amyloid		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	lymphocytic infiltration		6 (19)	0 (0)	0 (0)	0 (0)	5 (14)	0 (0)	0 (0)	0 (0)	5 (18)	0 (0)	0 (0)	0 (0)	4 (18)	0 (0)	0 (0)	0 (0)
	suppurative inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	inflammatory polyp		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hydronephrosis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 31				10 ppm 35				50 ppm 28				250 ppm. 22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	6 (21)	0 (0)	0 (0)	0 * (0)	16 (73)	5 (23)	0 (0)	0 ** (0)
ureter	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
urin bladd	inflammation		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Rathke pouch		8 (26)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	7 (25)	0 (0)	0 (0)	0 (0)	4 (18)	0 (0)	0 (0)	0 (0)
thyroid	lymphocytic infiltration		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	spindle-cell hyperplasia		14 (45)	0 (0)	0 (0)	0 (0)	18 (51)	0 (0)	0 (0)	0 (0)	11 (39)	0 (0)	0 (0)	0 (0)	6 (27)	0 (0)	0 (0)	0 (0)
	hyperplasia:cortical cell		3 (10)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	hyperplasia:medulla		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
testis	atrophy		8 (26)	1 (3)	0 (0)	0 (0)	10 (29)	0 (0)	0 (0)	0 (0)	9 (32)	0 (0)	0 (0)	0 (0)	5 (23)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	31				35				28				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Reproductive system]																		
testis	mineralization		22 (71)	3 (10)	0 (0)	0 (0)	23 (66)	3 (9)	0 (0)	0 (0)	14 (50)	3 (11)	0 (0)	0 (0)	12 (55)	2 (9)	0 (0)	0 (0)
epididymis	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	spermatogenic granuloma		0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	xanthogranuloma		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
prostate	inflammation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
prep/cli gl	duct ectasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain	deposit of calcium		18 (58)	0 (0)	0 (0)	0 (0)	26 (74)	0 (0)	0 (0)	0 (0)	15 (54)	0 (0)	0 (0)	0 (0)	10 (45)	0 (0)	0 (0)	0 (0)
	hyaline body		22 (71)	0 (0)	0 (0)	0 (0)	26 (74)	0 (0)	0 (0)	0 (0)	27 (96)	0 (0)	0 (0)	0 * (0)	14 (64)	0 (0)	0 (0)	0 (0)
spinal cord	epidermal cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
eye	keratitis		1 (3)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)

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

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	31				35				28				22			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Special sense organs/appandage]																		
Harder gl	degeneration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Musculoskeletal system]																		
bone	osteosclerosis		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
[Body cavities]																		
peritoneum	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)
	xanthogranuloma		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adipose	granulation		0 (0)	2 (6)	0 (0)	0 (0)	1 (3)	4 (11)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1 (5)	2 (9)	0 (0)	0 (0)

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

APPENDIX L 8

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : FEMALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	32				27				22				17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Respiratory system]																		
nasal cavit	eosinophilic change:olfactory epithelium		7 (22)	0 (0)	0 (0)	0 (0)	9 (33)	0 (0)	0 (0)	0 (0)	9 (41)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium		14 (44)	11 (34)	2 (6)	0 (0)	11 (41)	9 (33)	1 (4)	0 (0)	12 (55)	7 (32)	1 (5)	0 (0)	14 (82)	1 (6)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	5 (19)	0 (0)	0 (0)	0 * (0)	2 (9)	0 (0)	0 (0)	0 (0)	3 (18)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:gland		14 (44)	1 (3)	0 (0)	0 (0)	14 (52)	1 (4)	0 (0)	0 (0)	15 (68)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 ** (0)
	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
nasopharynx	eosinophilic change		2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
larynx	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lung	lymphocytic infiltration		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	3 (18)	0 (0)	0 (0)	0 (0)
	accumulation of foamy cells		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	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	myelofibrosis		2 (6)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	32				27				22				17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Hematopoietic system]																		
lymph node	Russel body		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of hemosiderin		2 (6)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	3 (18)	0 (0)	0 (0)	0 (0)
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
thymus	congestion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
spleen	Russel body		1 (3)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	congestion		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of hemosiderin		7 (22)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	0 (0)	3 (18)	0 (0)	0 (0)	0 (0)
	extramedullary hematopoiesis		2 (6)	0 (0)	0 (0)	0 (0)	6 (22)	3 (11)	0 (0)	0 * (0)	5 (23)	0 (0)	0 (0)	0 (0)	5 (29)	2 (12)	0 (0)	0 ** (0)
	follicular hyperplasia		2 (6)	1 (3)	0 (0)	0 (0)	5 (19)	1 (4)	0 (0)	0 (0)	4 (18)	1 (5)	0 (0)	0 (0)	1 (6)	2 (12)	0 (0)	0 (0)
[Circulatory system]																		
heart	thrombus		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization		1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 32				10 ppm 27				50 ppm 22				250 ppm 17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Circulatory system]																		
heart	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Digestive system]																		
tooth	dysplasia		6 (19)	0 (0)	0 (0)	0 (0)	5 (19)	0 (0)	0 (0)	0 (0)	3 (14)	0 (0)	0 (0)	0 (0)	2 (12)	0 (0)	0 (0)	0 (0)
tongue	arteritis		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
salivary gl	lymphocytic infiltration		3 (9)	1 (3)	0 (0)	0 (0)	4 (15)	0 (0)	0 (0)	0 (0)	5 (23)	1 (5)	0 (0)	0 (0)	2 (12)	0 (0)	0 (0)	0 (0)
stomach	mineralization		2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	inflammation		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia:glandular stomach		13 (41)	5 (16)	2 (6)	0 (0)	5 (19)	7 (26)	1 (4)	0 (0)	3 (14)	9 (41)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 ** (0)
small intes	deposit of amyloid		0 (0)	4 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)
liver	angiectasis		4 (13)	2 (6)	0 (0)	0 (0)	3 (11)	2 (7)	1 (4)	0 (0)	4 (18)	3 (14)	0 (0)	0 (0)	3 (18)	3 (18)	4 (24)	0 ** (0)
	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	32				27				22				17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	infarct		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)
	peliosis-like lesion		1 (3)	0 (0)	0 (0)	0 (0)	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:focal		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (12)	0 (0)	0 (0)	0 (0)
	cyst formation		0 (0)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	degeneration:central		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	1 (5)	1 (5)	0 (0)	0 (0)	2 (12)	12 (71)	1 (6)	0 (0) **
	inflammatory infiltration		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	granulation		16 (50)	2 (6)	0 (0)	0 (0)	11 (41)	0 (0)	0 (0)	0 (0)	11 (50)	0 (0)	0 (0)	0 (0)	13 (76)	1 (6)	0 (0)	0 (0)
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	clear cell focus		1 (3)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	2 (12)	0 (0)	0 (0)
	acidophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)
	basophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)
	vacuolated cell focus		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals	Control 32				10 ppm 27				50 ppm 22				250 ppm 17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Digestive system]																		
liver	mixed cell focus		2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
pancreas	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney	atypical tubular dilatation:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (12)	0 (0)	0 (0)	0 (0)
	infarct		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)	0 (0)
	hyaline droplet		0 (0)	1 (3)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	deposit of amyloid		0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	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)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	lymphocytic infiltration		10 (31)	1 (3)	0 (0)	0 (0)	9 (33)	1 (4)	0 (0)	0 (0)	6 (27)	0 (0)	0 (0)	0 (0)	3 (18)	0 (0)	0 (0)	0 (0)
	inflammatory polyp		0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hydronephrosis		0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 32				10 ppm 27				50 ppm 22				250 ppm 17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Urinary system]																		
kidney	dilatation:tubular lumen		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	nuclear enlargement:proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	4 (24)	13 (76)	0 (0)	0 (0) **
urin bladd	inflammation		1 (3)	1 (3)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Endocrine system]																		
pituitary	angiectasis		2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia		7 (22)	3 (9)	0 (0)	0 (0)	6 (22)	2 (7)	0 (0)	0 (0)	6 (27)	4 (18)	0 (0)	0 (0)	3 (18)	1 (6)	0 (0)	0 (0)
	Rathke pouch		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
thyroid	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal	spindle-cell hyperplasia		17 (53)	15 (47)	0 (0)	0 (0)	17 (63)	10 (37)	0 (0)	0 (0)	13 (59)	9 (41)	0 (0)	0 (0)	13 (76)	4 (24)	0 (0)	0 (0)
	hyperplasia:cortical cell		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
ovary	angiectasis		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	32				27				22				17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Reproductive system]																		
ovary	thrombus		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (6)	0 (0)	0 (0)
	cyst		11 (34)	0 (0)	0 (0)	0 (0)	5 (19)	0 (0)	0 (0)	0 (0)	4 (18)	0 (0)	0 (0)	0 (0)	4 (24)	0 (0)	0 (0)	0 (0)
uterus	cystic endometrial hyperplasia		18 (56)	4 (13)	0 (0)	0 (0)	15 (56)	8 (30)	0 (0)	0 (0)	10 (45)	7 (32)	1 (5)	0 (0)	10 (59)	4 (24)	0 (0)	0 (0)
[Nervous system]																		
brain	deposit of calcium		17 (53)	0 (0)	0 (0)	0 (0)	10 (37)	0 (0)	0 (0)	0 (0)	13 (59)	0 (0)	0 (0)	0 (0)	10 (59)	0 (0)	0 (0)	0 (0)
	hyaline body		25 (78)	0 (0)	0 (0)	0 (0)	23 (85)	0 (0)	0 (0)	0 (0)	16 (73)	0 (0)	0 (0)	0 (0)	16 (94)	0 (0)	0 (0)	0 (0)
	epidermal cyst		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Special sense organs/appandage]																		
eye	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	keratitis		2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Harder gl	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Musculoskeletal system]																		
muscle	arteritis		0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name	Control				10 ppm				50 ppm				250 ppm			
		No. of Animals	32				27				22				17			
			<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)	<1> (%)	<2> (%)	<3> (%)	<4> (%)
[Musculoskeletal system]																		
bone	osteosclerosis		1 (3)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	5 (29)	0 (0)	0 (0)	0 * (0)
[Body cavities]																		
adipose	granulation		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

APPENDIX M 1

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : DEAD AND MORIBUND ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name / No. of Animals	Control 13	50 ppm 16	200 ppm 20	600 ppm 22
[Respiratory system]						
trachea	leukemic cell infiltration		0	0	0	1
lung	leukemic cell infiltration		0	6	8	9
	metastasis:thyroid tumor		0	0	1	0
	metastasis:bone tumor		0	0	1	1
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		0	0	3	2
lymph node	leukemic cell infiltration		1	6	3	3
[Circulatory system]						
heart	leukemic cell infiltration		0	0	1	0
[Digestive system]						
stomach	leukemic cell infiltration		0	1	0	1
small intes	leukemic cell infiltration		0	1	0	1
large intes	leukemic cell infiltration		0	1	0	1
liver	leukemic cell infiltration		2	7	9	14
	metastasis:bone tumor		0	0	1	0
pancreas	leukemic cell infiltration		0	1	0	1
	metastasis:small intestine tumor		1	0	0	0
[Urinary system]						
kidney	leukemic cell infiltration		0	2	3	0

Organ	Findings	Group Name / No. of Animals	Control 13	50 ppm 16	200 ppm 20	600 ppm 22
[Urinary system]						
urin bladd	leukemic cell infiltration		0	1	0	1
[Endocrine system]						
pituitary	leukemic cell infiltration		0	0	2	0
panc islet	metastasis:bone tumor		0	0	0	1
adrenal	leukemic cell infiltration		0	0	1	0
[Reproductive system]						
epididymis	leukemic cell infiltration		0	2	0	1
semin ves	leukemic cell infiltration		0	1	0	2
prostate	leukemic cell infiltration		0	2	1	2
[Nervous system]						
brain	leukemic cell infiltration		0	1	0	2
[Special sense organs/appandage]						
Harder gl	leukemic cell infiltration		0	1	0	1

APPENDIX M 2

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE : DEAD AND MORIBUND ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name / No. of Animals	Control 8	50 ppm 16	200 ppm 16	600 ppm 16
[Respiratory system]						
lung	leukemic cell infiltration		3	9	6	9
	metastasis:uterus tumor		0	0	1	0
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		1	0	0	1
lymph node	leukemic cell infiltration		1	4	3	3
[Digestive system]						
liver	leukemic cell infiltration		3	10	9	11
pancreas	leukemic cell infiltration		0	1	0	0
[Urinary system]						
kidney	leukemic cell infiltration		0	3	0	1
[Endocrine system]						
adrenal	leukemic cell infiltration		1	0	0	1
[Reproductive system]						
ovary	leukemic cell infiltration		0	0	0	1
uterus	leukemic cell infiltration		0	0	0	2
vagina	leukemic cell infiltration		0	0	0	1
[Nervous system]						
brain	leukemic cell infiltration		0	0	0	2

Organ	Findings	Group Name / No. of Animals	Control 8	50 ppm 16	200 ppm 16	600 ppm 16
[Nervous system]						
brain	metastasis:pituitary tumor		1	1	0	0
[Special sense organs/appandage]						
Harder gl	leukemic cell infiltration		0	0	0	1
[Body cavities]						
peritoneum	metastasis:uterus tumor		0	0	1	0

APPENDIX M 3

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : METASTASIS OF TUMOR (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 37	50 ppm 34	200 ppm 30	600 ppm 28
[Respiratory system]						
trachea	leukemic cell infiltration		0	0	0	1
lung	leukemic cell infiltration		0	1	4	3
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		0	0	1	1
lymph node	leukemic cell infiltration		0	0	1	0
[Digestive system]						
liver	leukemic cell infiltration		4	2	5	3
[Urinary system]						
kidney	leukemic cell infiltration		2	0	0	0
[Endocrine system]						
adrenal	leukemic cell infiltration		0	0	0	1
[Reproductive system]						
prostate	leukemic cell infiltration		0	0	1	0

APPENDIX M 4

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name / No. of Animals	Control 42	50 ppm 34	200 ppm 34	600 ppm 34
[Respiratory system]						
lung	leukemic cell infiltration		2	2	3	4
	metastasis:adrenal tumor		0	0	1	1
	metastasis:thyroid tumor		0	1	0	0
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		0	0	1	0
lymph node	leukemic cell infiltration		0	2	3	1
[Digestive system]						
stomach	leukemic cell infiltration		0	0	1	0
liver	leukemic cell infiltration		4	6	5	7
[Endocrine system]						
pituitary	leukemic cell infiltration		0	0	1	0
thyroid	leukemic cell infiltration		0	1	0	0
[Nervous system]						
brain	metastasis:pituitary tumor		0	1	1	0

APPENDIX M 5

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : DEAD AND MORIBUND ANIMALS

MOSUE (2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : METASTASIS OF TUMOR (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / No. of Animals	Control 19	10 ppm 15	50 ppm 22	250 ppm 28
[Respiratory system]						
nasal cavit	metastasis:subcutis tumor		0	0	0	1
lung	leukemic cell infiltration		0	0	1	1
	metastasis:liver tumor		0	3	3	6
	metastasis:bone tumor		0	0	1	0
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		0	2	1	0
	metastasis:liver tumor		1	0	0	0
	metastasis:seminal vesicle tumor		1	0	0	0
spleen	leukemic cell infiltration		2	2	2	4
	metastasis:liver tumor		1	0	0	0
	metastasis:seminal vesicle tumor		1	0	0	0
[Circulatory system]						
heart	leukemic cell infiltration		0	2	0	0
[Digestive system]						
tongue	leukemic cell infiltration		0	1	0	0
salivary gl	leukemic cell infiltration		0	2	0	1
	metastasis:liver tumor		0	0	0	1
stomach	leukemic cell infiltration		0	1	0	1

Organ	Findings	Group Name / No. of Animals	Control 19	10 ppm 15	50 ppm 22	250 ppm 28
[Digestive system]						
liver	leukemic cell infiltration		2	2	1	2
	metastasis:subcutis tumor		0	0	0	1
	metastasis:bone tumor		0	0	1	0
	metastasis:seminal vesicle tumor		1	0	0	0
gall bladd	leukemic cell infiltration		0	0	0	1
pancreas	leukemic cell infiltration		2	0	1	2
[Urinary system]						
kidney	leukemic cell infiltration		1	1	0	1
urin bladd	leukemic cell infiltration		0	1	0	1
	metastasis:liver tumor		1	0	0	0
	metastasis:subcutis tumor		0	0	0	1
	metastasis:seminal vesicle tumor		0	0	0	1
[Reproductive system]						
epididymis	leukemic cell infiltration		0	0	0	2
semin ves	leukemic cell infiltration		1	0	0	1
prostate	leukemic cell infiltration		1	3	0	0
[Musculoskeletal system]						
muscle	leukemic cell infiltration		0	2	0	0

Organ	Findings	Group Name / No. of Animals	Control 19	10 ppm 15	50 ppm 22	250 ppm 28
[Musculoskeletal system]						
muscle	metastasis:epididymis tumor		0	0	0	1
[Body cavities]						
mediastinum	leukemic cell infiltration		0	1	0	0
peritoneum	metastasis:seminal vesicle tumor		1	0	0	0

APPENDIX M 6

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

MOSUE : FEMALE : DEAD AND MORIBUND ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name / No. of Animals	Control 18	10 ppm 20	50 ppm 27	250 ppm 33
[Integumentary system/appandage]						
skin/app	leukemic cell infiltration		0	1	1	0
[Respiratory system]						
nasal cavit	metastasis:uterus tumor		0	2	0	1
larynx	leukemic cell infiltration		0	1	2	0
trachea	leukemic cell infiltration		0	0	1	0
	metastasis:subcutis tumor		0	1	0	0
lung	leukemic cell infiltration		5	3	9	3
	metastasis:liver tumor		0	0	1	0
	metastasis:uterus tumor		5	2	4	3
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		3	1	3	3
	metastasis:uterus tumor		2	4	3	2
lymph node	leukemic cell infiltration		0	0	2	1
	metastasis:liver tumor		0	1	0	0
	metastasis:uterus tumor		4	4	5	0
thymus	metastasis:uterus tumor		0	0	1	0
spleen	leukemic cell infiltration		5	3	7	3
	metastasis:liver tumor		0	1	1	0
	metastasis:uterus tumor		4	2	3	4

Organ	Findings	Group Name / No. of Animals	Control 18	10 ppm 20	50 ppm 27	250 ppm 33
[Circulatory system]						
heart	leukemic cell infiltration		4	1	4	2
	metastasis:uterus tumor		1	1	1	0
[Digestive system]						
tongue	leukemic cell infiltration		4	1	5	1
	metastasis:uterus tumor		0	0	1	0
salivary gl	leukemic cell infiltration		5	2	8	2
	metastasis:liver tumor		0	0	1	0
stomach	leukemic cell infiltration		0	1	3	0
	metastasis:uterus tumor		0	1	0	0
small intes	leukemic cell infiltration		0	1	0	0
liver	leukemic cell infiltration		6	2	10	5
	metastasis:uterus tumor		8	7	7	6
	metastasis:stomach tumor		1	0	0	0
pancreas	leukemic cell infiltration		4	1	5	3
	metastasis:uterus tumor		2	7	0	2
[Urinary system]						
kidney	leukemic cell infiltration		4	2	4	3
	metastasis:uterus tumor		3	4	3	0
	metastasis:subcutis tumor		0	1	0	0

Organ	Findings	Group Name / No. of Animals	Control 18	10 ppm 20	50 ppm 27	250 ppm 33
[Urinary system]						
urin bladd	leukemic cell infiltration		3	2	6	0
	metastasis:uterus tumor		0	1	0	0
[Endocrine system]						
pituitary	metastasis:uterus tumor		0	1	0	0
thyroid	leukemic cell infiltration		0	1	1	0
adrenal	leukemic cell infiltration		1	0	2	0
[Reproductive system]						
ovary	leukemic cell infiltration		4	3	6	3
	metastasis:uterus tumor		4	5	5	3
uterus	leukemic cell infiltration		4	1	5	1
vagina	leukemic cell infiltration		3	1	5	1
mammary gl	leukemic cell infiltration		3	3	5	1
[Nervous system]						
brain	leukemic cell infiltration		1	0	4	0
spinal cord	leukemic cell infiltration		0	0	3	0
[Special sense organs/appandage]						
eye	leukemic cell infiltration		0	1	1	0
Harder gl	leukemic cell infiltration		3	2	2	0

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : METASTASIS OF TUMOR (SUMMARY)
DEAD AND MORIBUND ANIMALS (0-105W)

Organ	Findings	Group Name / No. of Animals	Control 18	10 ppm 20	50 ppm 27	250 ppm 33
[Special sense organs/appandage]						
Harder gl	metastasis:uterus tumor		0	0	0	1
[Musculoskeletal system]						
muscle	leukemic cell infiltration		2	2	2	3
	metastasis:uterus tumor		0	0	0	1
[Body cavities]						
peritoneum	metastasis:uterus tumor		0	1	0	0
retroperit	metastasis:uterus tumor		2	2	1	0

APPENDIX M 7

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : METASTASIS OF TUMOR (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 31	10 ppm 35	50 ppm 28	250 ppm 22
[Respiratory system]						
lung	leukemic cell infiltration		1	0	0	0
	metastasis:liver tumor		2	0	2	2
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		0	2	1	0
lymph node	leukemic cell infiltration		0	0	2	0
	metastasis:stomach tumor		0	0	1	0
	metastasis:epididymis tumor		0	1	0	0
spleen	leukemic cell infiltration		2	3	4	3
[Circulatory system]						
heart	leukemic cell infiltration		0	0	1	0
[Digestive system]						
salivary gl	leukemic cell infiltration		1	0	0	0
stomach	leukemic cell infiltration		0	1	0	0
liver	leukemic cell infiltration		1	1	0	2
	metastasis:epididymis tumor		0	1	0	0
pancreas	metastasis:seminal vesicle tumor		1	0	0	0
[Urinary system]						
kidney	leukemic cell infiltration		0	1	1	0

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : METASTASIS OF TUMOR (SUMMARY)
SACRIFICED ANIMALS (105W)

Organ	Findings	Group Name / No. of Animals	Control 31	10 ppm 35	50 ppm 28	250 ppm 22
[Urinary system]						
kidney	metastasis:epididymis tumor		0	1	0	0
urin bladd	leukemic cell infiltration		1	0	0	0
[Reproductive system]						
testis	metastasis:epididymis tumor		0	1	0	0

APPENDIX M 8

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

MOSUE : FEMALE : SACRIFICED ANIMALS

(2-YEAR STUDY)

Organ	Findings	Group Name / No. of Animals	Control 32	10 ppm 27	50 ppm 22	250 ppm 17
[Respiratory system]						
larynx	leukemic cell infiltration		1	0	0	0
trachea	leukemic cell infiltration		1	1	0	0
lung	leukemic cell infiltration		5	3	4	0
	metastasis:subcutis tumor		1	0	0	0
[Hematopoietic system]						
bone marrow	leukemic cell infiltration		3	3	3	0
lymph node	leukemic cell infiltration		2	0	2	1
spleen	leukemic cell infiltration		4	7	5	0
[Circulatory system]						
heart	leukemic cell infiltration		1	2	1	0
[Digestive system]						
tongue	leukemic cell infiltration		1	1	0	0
salivary gl	leukemic cell infiltration		4	4	4	1
stomach	leukemic cell infiltration		3	0	0	0
small intes	leukemic cell infiltration		0	1	0	0
liver	leukemic cell infiltration		6	4	4	1
	metastasis:uterus tumor		1	0	0	0
pancreas	leukemic cell infiltration		3	2	2	2

Organ	Findings	Group Name / No. of Animals	Control 32	10 ppm 27	50 ppm 22	250 ppm 17
[Urinary system]						
kidney	leukemic cell infiltration		3	3	1	0
urin bladd	leukemic cell infiltration		1	2	3	1
[Endocrine system]						
adrenal	leukemic cell infiltration		1	0	0	0
[Reproductive system]						
ovary	leukemic cell infiltration		1	2	0	0
	metastasis:uterus tumor		0	1	0	0
uterus	leukemic cell infiltration		2	2	1	0
vagina	leukemic cell infiltration		3	2	0	0
mammary gl	leukemic cell infiltration		1	3	2	0
[Nervous system]						
brain	leukemic cell infiltration		2	0	0	0
spinal cord	leukemic cell infiltration		2	0	0	0
[Special sense organs/appandage]						
Harder gl	leukemic cell infiltration		0	1	0	1
[Musculoskeletal system]						
muscle	leukemic cell infiltration		1	0	1	0

APPENDIX N1

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED

RAT : MALE

(2-YEAR STUDY)

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	50 ppm	200 ppm	600 ppm
0 - 52	NO. OF EXAMINED ANIMALS		0	0	0	0
	NO. OF ANIMALS WITH TUMORS		0	0	0	0
	NO. OF ANIMALS WITH SINGLE TUMORS		0	0	0	0
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	0	0
	NO. OF BENIGN TUMORS		0	0	0	0
	NO. OF MALIGNANT TUMORS		0	0	0	0
	NO. OF TOTAL TUMORS		0	0	0	0
53 - 78	NO. OF EXAMINED ANIMALS		0	2	3	1
	NO. OF ANIMALS WITH TUMORS		0	2	3	1
	NO. OF ANIMALS WITH SINGLE TUMORS		0	1	0	1
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	1	3	0
	NO. OF BENIGN TUMORS		0	1	5	0
	NO. OF MALIGNANT TUMORS		0	2	3	1
	NO. OF TOTAL TUMORS		0	3	8	1
79 - 104	NO. OF EXAMINED ANIMALS		13	14	17	21
	NO. OF ANIMALS WITH TUMORS		13	14	17	21
	NO. OF ANIMALS WITH SINGLE TUMORS		2	1	4	1
	NO. OF ANIMALS WITH MULTIPLE TUMORS		11	13	13	20
	NO. OF BENIGN TUMORS		22	27	30	39
	NO. OF MALIGNANT TUMORS		8	14	12	23
	NO. OF TOTAL TUMORS		30	41	42	62
105 - 105	NO. OF EXAMINED ANIMALS		37	34	30	28
	NO. OF ANIMALS WITH TUMORS		37	33	30	28
	NO. OF ANIMALS WITH SINGLE TUMORS		9	8	8	6
	NO. OF ANIMALS WITH MULTIPLE TUMORS		28	25	22	22
	NO. OF BENIGN TUMORS		69	71	48	49
	NO. OF MALIGNANT TUMORS		13	10	19	17
	NO. OF TOTAL TUMORS		82	81	67	66

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	50 ppm	200 ppm	600 ppm
0 - 105	NO. OF EXAMINED ANIMALS		50	50	50	50
	NO. OF ANIMALS WITH TUMORS		50	49	50	50
	NO. OF ANIMALS WITH SINGLE TUMORS		11	10	12	8
	NO. OF ANIMALS WITH MULTIPLE TUMORS		39	39	38	42
	NO. OF BENIGN TUMORS		91	99	83	88
	NO. OF MALIGNANT TUMORS		21	26	34	41
	NO. OF TOTAL TUMORS		112	125	117	129

APPENDIX N2

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED

RAT : FEMALE

(2-YEAR STUDY)

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	50 ppm	200 ppm	600 ppm
0 - 52	NO. OF EXAMINED ANIMALS		0	0	0	0
	NO. OF ANIMALS WITH TUMORS		0	0	0	0
	NO. OF ANIMALS WITH SINGLE TUMORS		0	0	0	0
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	0	0
	NO. OF BENIGN TUMORS		0	0	0	0
	NO. OF MALIGNANT TUMORS		0	0	0	0
	NO. OF TOTAL TUMORS		0	0	0	0
53 - 78	NO. OF EXAMINED ANIMALS		0	3	3	1
	NO. OF ANIMALS WITH TUMORS		0	3	3	1
	NO. OF ANIMALS WITH SINGLE TUMORS		0	2	2	1
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	1	1	0
	NO. OF BENIGN TUMORS		0	1	3	0
	NO. OF MALIGNANT TUMORS		0	3	2	1
	NO. OF TOTAL TUMORS		0	4	5	1
79 - 104	NO. OF EXAMINED ANIMALS		8	13	13	15
	NO. OF ANIMALS WITH TUMORS		8	13	12	15
	NO. OF ANIMALS WITH SINGLE TUMORS		4	7	8	9
	NO. OF ANIMALS WITH MULTIPLE TUMORS		4	6	4	6
	NO. OF BENIGN TUMORS		7	9	6	11
	NO. OF MALIGNANT TUMORS		6	14	11	14
	NO. OF TOTAL TUMORS		13	23	17	25
105 - 105	NO. OF EXAMINED ANIMALS		42	34	34	34
	NO. OF ANIMALS WITH TUMORS		24	24	21	18
	NO. OF ANIMALS WITH SINGLE TUMORS		15	14	14	14
	NO. OF ANIMALS WITH MULTIPLE TUMORS		9	10	7	4
	NO. OF BENIGN TUMORS		31	29	20	14
	NO. OF MALIGNANT TUMORS		8	11	11	8
	NO. OF TOTAL TUMORS		39	40	31	22

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	50 ppm	200 ppm	600 ppm
0 - 105	NO. OF EXAMINED ANIMALS		50	50	50	50
	NO. OF ANIMALS WITH TUMORS		32	40	36	34
	NO. OF ANIMALS WITH SINGLE TUMORS		19	23	24	24
	NO. OF ANIMALS WITH MULTIPLE TUMORS		13	17	12	10
	NO. OF BENIGN TUMORS		38	39	29	25
	NO. OF MALIGNANT TUMORS		14	28	24	23
	NO. OF TOTAL TUMORS		52	67	53	48

APPENDIX N3

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED

MOSUE : MALE

(2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	10 ppm	50 ppm	250 ppm
0 - 52	NO. OF EXAMINED ANIMALS		4	1	2	1
	NO. OF ANIMALS WITH TUMORS		0	1	0	0
	NO. OF ANIMALS WITH SINGLE TUMORS		0	0	0	0
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	1	0	0
	NO. OF BENIGN TUMORS		0	1	0	0
	NO. OF MALIGNANT TUMORS		0	1	0	0
	NO. OF TOTAL TUMORS		0	2	0	0
53 - 78	NO. OF EXAMINED ANIMALS		2	2	5	3
	NO. OF ANIMALS WITH TUMORS		2	0	3	3
	NO. OF ANIMALS WITH SINGLE TUMORS		1	0	1	1
	NO. OF ANIMALS WITH MULTIPLE TUMORS		1	0	2	2
	NO. OF BENIGN TUMORS		1	0	1	1
	NO. OF MALIGNANT TUMORS		2	0	4	5
	NO. OF TOTAL TUMORS		3	0	5	6
79 - 104	NO. OF EXAMINED ANIMALS		13	12	15	24
	NO. OF ANIMALS WITH TUMORS		10	7	11	22
	NO. OF ANIMALS WITH SINGLE TUMORS		6	5	3	7
	NO. OF ANIMALS WITH MULTIPLE TUMORS		4	2	8	15
	NO. OF BENIGN TUMORS		5	2	6	16
	NO. OF MALIGNANT TUMORS		10	8	14	26
	NO. OF TOTAL TUMORS		15	10	20	42
105 - 105	NO. OF EXAMINED ANIMALS		31	35	28	22
	NO. OF ANIMALS WITH TUMORS		21	26	19	21
	NO. OF ANIMALS WITH SINGLE TUMORS		12	17	11	7
	NO. OF ANIMALS WITH MULTIPLE TUMORS		9	9	8	14
	NO. OF BENIGN TUMORS		15	25	12	22
	NO. OF MALIGNANT TUMORS		18	14	19	22
	NO. OF TOTAL TUMORS		33	39	31	44

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	10 ppm	50 ppm	250 ppm
0 - 105	NO. OF EXAMINED ANIMALS		50	50	50	50
	NO. OF ANIMALS WITH TUMORS		33	34	33	46
	NO. OF ANIMALS WITH SINGLE TUMORS		19	22	15	15
	NO. OF ANIMALS WITH MULTIPLE TUMORS		14	12	18	31
	NO. OF BENIGN TUMORS		21	28	19	39
	NO. OF MALIGNANT TUMORS		30	23	37	53
	NO. OF TOTAL TUMORS		51	51	56	92

APPENDIX N4

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS-TIME RELATED

MOSUE : FEMALE

(2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	10 ppm	50 ppm	250 ppm
0 - 52	NO. OF EXAMINED ANIMALS		0	0	1	0
	NO. OF ANIMALS WITH TUMORS		0	0	1	0
	NO. OF ANIMALS WITH SINGLE TUMORS		0	0	1	0
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	0	0
	NO. OF BENIGN TUMORS		0	0	0	0
	NO. OF MALIGNANT TUMORS		0	0	1	0
	NO. OF TOTAL TUMORS		0	0	1	0
53 - 78	NO. OF EXAMINED ANIMALS		4	5	4	1
	NO. OF ANIMALS WITH TUMORS		3	3	2	0
	NO. OF ANIMALS WITH SINGLE TUMORS		3	3	2	0
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	0	0
	NO. OF BENIGN TUMORS		0	1	0	0
	NO. OF MALIGNANT TUMORS		3	2	2	0
	NO. OF TOTAL TUMORS		3	3	2	0
79 - 104	NO. OF EXAMINED ANIMALS		14	15	22	32
	NO. OF ANIMALS WITH TUMORS		13	14	21	32
	NO. OF ANIMALS WITH SINGLE TUMORS		10	7	17	12
	NO. OF ANIMALS WITH MULTIPLE TUMORS		3	7	4	20
	NO. OF BENIGN TUMORS		4	9	4	25
	NO. OF MALIGNANT TUMORS		14	13	23	33
	NO. OF TOTAL TUMORS		18	22	27	58
105 - 105	NO. OF EXAMINED ANIMALS		32	27	22	17
	NO. OF ANIMALS WITH TUMORS		22	20	15	15
	NO. OF ANIMALS WITH SINGLE TUMORS		11	13	6	6
	NO. OF ANIMALS WITH MULTIPLE TUMORS		11	7	9	9
	NO. OF BENIGN TUMORS		20	14	13	16
	NO. OF MALIGNANT TUMORS		17	13	13	11
	NO. OF TOTAL TUMORS		37	27	26	27

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

NUMBER OF ANIMALS WITH TUMORS AND NUMBER OF TUMORS - TIME RELATED

Time-related Weeks	Items	Group Name	Control	10 ppm	50 ppm	250 ppm
0 - 105	NO. OF EXAMINED ANIMALS		50	47	49	50
	NO. OF ANIMALS WITH TUMORS		38	37	39	47
	NO. OF ANIMALS WITH SINGLE TUMORS		24	23	26	18
	NO. OF ANIMALS WITH MULTIPLE TUMORS		14	14	13	29
	NO. OF BENIGN TUMORS		24	24	17	41
	NO. OF MALIGNANT TUMORS		34	28	39	44
	NO. OF TOTAL TUMORS		58	52	56	85

APPENDIX O 1

NEOPLASTIC LESIONS-INCIDENCE AND TIME OF TUMOR OCCURRENCE

RAT : MALE

(2-YEAR STUDY)

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Integumentary system/appandage]						
skin/app	keratoacanthoma		0	1 (2) (91W)	1 (2) (100W)	0
	tricho lemoma		0	0	0	1 (2) (105W)
subcutis	fibroma		1 (2) (105W)	5 (10) (92 - 105W)	3 (6) (77 - 105W)	5 (10) (100 - 105W)
	lipoma		0	0	1 (2) (105W)	0
	granular cell tumor		0	0	0	1 (2) (98W)
	leiomyosarcoma		0	0	1 (2) (79W)	0
	schwannoma:malignant		0	0	1 (2) (105W)	2 (4) (63 - 105W)
	sarcoma:NOS		0	0	1 (2) (105W)	0
[Respiratory system]						
lung	bronchiolar-alveolar adenoma		0	2 (4) (105W)	1 (2) (105W)	0
[Hematopoietic system]						
thymus	thymoma:benign		1 (2) (105W)	1 (2) (105W)	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Hematopoietic system]						
spleen	mononuclear cell leukemia		11 (22) (104 - 105W)	14 (28) (81 - 105W)	22 (44) (70 - 105W)	27 (54) (81 - 105W)
[Digestive system]						
tongue	papilloma		0	0	0	1 (2) (101W)
stomach	keratoacanthoma		0	0	0	1 (2) (105W)
small intes	leiomyosarcoma		1 (2) (94W)	0	0	1 (2) (96W)
liver	hepatocellular adenoma		3 (6) (84 - 105W)	0	0	2 (4) (105W)
	cholangiocellular adenoma		1 (2) (105W)	0	0	0
	cholangiocellular carcinoma		1 (2) (105W)	0	1 (2) (105W)	0
[Urinary system]						
kidney	liposarcoma		0	0	0	1 (2) (98W)
	renal cell carcinoma		1 (2) (105W)	2 (4) (102 - 105W)	1 (2) (101W)	2 (4) (100 - 105W)
urin bladd	papilloma		0	1 (2) (105W)	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Urinary system]						
urin bladd	transitional cell papilloma		0	1 (2) (100W)	0	1 (2) (97W)
[Endocrine system]						
pituitary	adenoma		16 (32) (84 - 105W)	16 (32) (92 - 105W)	18 (36) (70 - 105W)	15 (30) (82 - 105W)
thyroid	C-cell adenoma		6 (12) (105W)	10 (20) (89 - 105W)	7 (14) (92 - 105W)	3 (6) (86 - 104W)
	follicular adenoma		0	0	0	1 (2) (100W)
	C-cell carcinoma		1 (2) (105W)	1 (2) (100W)	3 (6) (104 - 105W)	0
	follicular adenocarcinoma		0	3 (6) (102 - 105W)	0	0
panc islet	adenoma		3 (6) (105W)	4 (8) (105W)	1 (2) (99W)	3 (6) (84 - 105W)
	adenocarcinoma		1 (2) (104W)	0	1 (2) (105W)	1 (2) (99W)
adrenal	pheochromocytoma		8 (16) (104 - 105W)	5 (10) (92 - 105W)	3 (6) (96 - 105W)	3 (6) (95 - 105W)
	cortical adenoma		0	2 (4) (105W)	0	0
	pheochromocytoma:malignant		1 (2) (90W)	1 (2) (67W)	1 (2) (105W)	2 (4) (103 - 104W)

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

STUDY NO. : 0104
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Endocrine system]						
adrenal	cortical adenocarcinoma		0	0	0	1 (2) (105W)
[Reproductive system]						
testis	interstitial cell tumor		47 (94) (83 - 105W)	46 (92) (67 - 105W)	45 (90) (74 - 105W)	48 (96) (81 - 105W)
prostate	adenoma		0	0	0	2 (4) (105W)
mammary gl	adenoma		1 (2) (104W)	0	1 (2) (105W)	1 (2) (98W)
	fibroadenoma		2 (4) (88 - 105W)	2 (4) (102 - 105W)	0	0
	adenocarcinoma		0	0	0	1 (2) (105W)
prep/cli gl	adenoma		1 (2) (105W)	3 (6) (105W)	2 (4) (86 - 104W)	0
	squamous cell carcinoma		0	0	0	2 (4) (100 - 105W)
[Nervous system]						
brain	glioma		2 (4) (83 - 105W)	0	0	0
[Special sense organs/appandage]						
Zymbal gl	adenoma		1 (2) (105W)	0	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Special sense organs/appandage]						
Zymbal gl	squamous cell carcinoma		0	0	1 (2) (100W)	0
	adenocarcinoma		0	1 (2) (103W)	0	0
[Musculoskeletal system]						
muscle	leiomyosarcoma		1 (2) (94W)	0	0	0
bone	osteosarcoma		0	1 (2) (91W)	1 (2) (74W)	1 (2) (99W)
[Body cavities]						
pleura	mesothelioma		1 (2) (92W)	0	0	0
mediastinum	schwannoma:malignant		0	1 (2) (65W)	0	0
peritoneum	mesothelioma		0	1 (2) (98W)	0	0
retroperit	schwannoma:malignant		0	1 (2) (105W)	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

APPENDIX O 2

NEOPLASTIC LESIONS-INCIDENCE AND TIME OF TUMOR OCCURRENCE

RAT : FEMALE

(2-YEAR STUDY)

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Integumentary system/appandage]						
skin/app	papilloma		0	0	0	1 (2) (91W)
subcutis	fibroma		0	0	2 (4) (105W)	2 (4) (93 - 105W)
	schwannoma		0	1 (2) (70W)	0	0
	sarcoma:NOS		0	1 (2) (105W)	0	0
[Respiratory system]						
nasal cavit	papilloma		0	0	0	1 (2) (105W)
lung	bronchiolar-alveolar adenoma		2 (4) (105W)	0	0	0
	bronchiolar-alveolar carcinoma		0	0	1 (2) (105W)	0
[Hematopoietic system]						
spleen	hamartoma		0	0	0	1 (2) (102W)
	mononuclear cell leukemia		10 (20) (100 - 105W)	17 (34) (66 - 105W)	16 (32) (74 - 105W)	19 (38) (70 - 105W)
	hemangioendothelioma		1 (2) (81W)	0	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Digestive system]						
oral cavity	keratoacanthoma		1 (2) (105W)	0	0	0
small intes	adenoma		0	0	1 (2) (103W)	0
liver	hepatocellular adenoma		0	0	1 (2) (105W)	0
	cholangiocellular adenoma		1 (2) (102W)	0	0	0
	cholangiocellular carcinoma		1 (2) (105W)	0	0	0
[Urinary system]						
kidney	renal cell carcinoma		0	0	0	1 (2) (84W)
urin bladd	transitional cell papilloma		0	1 (2) (105W)	0	0
[Endocrine system]						
pituitary	adenoma		12 (24) (93 - 105W)	16 (32) (89 - 105W)	16 (32) (70 - 105W)	11 (22) (79 - 105W)
	adenocarcinoma		1 (2) (100W)	2 (4) (103 - 105W)	1 (2) (105W)	0
thyroid	C-cell adenoma		4 (8) (104 - 105W)	2 (4) (104 - 105W)	1 (2) (92W)	3 (6) (105W)

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Endocrine system]						
thyroid	follicular adenoma		1 (2) (105W)	0	0	0
	C-cell carcinoma		1 (2) (105W)	3 (6) (103 - 105W)	0	1 (2) (93W)
	follicular adenocarcinoma		0	1 (2) (79W)	1 (2) (105W)	0
panc islet	adenoma		0	1 (2) (105W)	0	0
adrenal	pheochromocytoma		1 (2) (105W)	1 (2) (105W)	1 (2) (105W)	2 (4) (105W)
	cortical adenoma		0	1 (2) (89W)	2 (4) (104 - 105W)	1 (2) (105W)
	pheochromocytoma:malignant		0	1 (2) (70W)	1 (2) (105W)	1 (2) (105W)
[Reproductive system]						
uterus	endometrial stromal polyp		8 (16) (102 - 105W)	3 (6) (96 - 105W)	2 (4) (74 - 105W)	3 (6) (93 - 105W)
	osteogenic sarcoma		0	0	1 (2) (92W)	0
	schwannoma:malignant		0	1 (2) (93W)	0	1 (2) (91W)
	endometrial stromal sarcoma		0	0	2 (4) (69 - 79W)	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	200 ppm NO. (%) (Initial - Final)	600 ppm NO. (%) (Initial - Final)
[Reproductive system]						
mammary gl	adenoma		4 (8) (100 - 105W)	0	1 (2) (105W)	0
	fibroadenoma		3 (6) (105W)	13 (26) (90 - 105W)	1 (2) (105W)	0
	adenocarcinoma		0	1 (2) (97W)	0	0
prep/cli gl	adenoma		0	0	1 (2) (95W)	0
	squamous cell carcinoma		0	1 (2) (97W)	0	0
[Nervous system]						
brain	glioma		0	0	1 (2) (84W)	0
[Special sense organs/appandage]						
Zymbal gl	adenoma		1 (2) (104W)	0	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

APPENDIX O 3

NEOPLASTIC LESIONS-INCIDENCE AND TIME OF TUMOR OCCURRENCE

MOSUE: MALE

(2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	10 ppm NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	250 ppm NO. (%) (Initial - Final)
[Integumentary system/appandage]						
subcutis	hemangioendothelioma:benign		1 (2) (97W)	0	1 (2) (82W)	0
	histiocytic sarcoma		0	0	0	1 (2) (85W)
	mastcytoma:malignant		0	0	1 (2) (105W)	0
brown fat	hemangioendothelioma		0	0	0	1 (2) (105W)
[Respiratory system]						
lung	bronchiolar-alveolar adenoma		9 (18) (104 - 105W)	7 (14) (105W)	5 (10) (94 - 105W)	4 (8) (82 - 105W)
	bronchiolar-alveolar carcinoma		2 (4) (102 - 105W)	3 (6) (101 - 105W)	3 (6) (82 - 105W)	0
[Hematopoietic system]						
lymph node	malignant lymphoma		9 (18) (77 - 105W)	7 (14) (39 - 105W)	7 (14) (76 - 105W)	9 (18) (86 - 105W)
	mastcytoma:malignant		0	1 (2) (105W)	0	2 (4) (99 - 105W)
spleen	hemangioendothelioma:benign		1 (2) (105W)	1 (2) (105W)	0	1 (2) (99W)
	malignant lymphoma		1 (2) (105W)	0	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	10 ppm NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	250 ppm NO. (%) (Initial - Final)
[Hematopoietic system]						
spleen	mastcytoma:malignant		1 (2) (105W)	0	1 (2) (105W)	0
	hemangioendothelioma		1 (2) (105W)	1 (2) (91W)	3 (6) (68 - 95W)	5 (10) (66 - 105W)
[Circulatory system]						
heart	hemangioendothelioma		0	0	1 (2) (94W)	0
[Digestive system]						
stomach	papilloma		0	1 (2) (39W)	0	0
	carcinoid tumor:malignant		0	0	1 (2) (105W)	0
small intes	adenocarcinoma		1 (2) (105W)	0	0	0
liver	hepatocellular adenoma		7 (14) (76 - 105W)	13 (26) (85 - 105W)	8 (16) (76 - 105W)	26 (52) (75 - 105W)
	histiocytic sarcoma		2 (4) (76 - 96W)	0	1 (2) (105W)	1 (2) (100W)
	hemangioendothelioma		1 (2) (103W)	1 (2) (91W)	5 (10) (68 - 105W)	5 (10) (92 - 105W)
	hepatocellular carcinoma		7 (14) (97 - 105W)	8 (16) (98 - 105W)	12 (24) (74 - 105W)	25 (50) (66 - 105W)

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	10 ppm NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	250 ppm NO. (%) (Initial - Final)
[Digestive system]						
liver	hepatoblastoma		0	1 (2) (105W)	0	0
[Urinary system]						
kidney	renal cell adenoma		0	1 (2) (105W)	0	0
	renal cell carcinoma		0	0	1 (2) (105W)	0
urin bladd	leiomyoma		0	1 (2) (105W)	0	0
[Endocrine system]						
pituitary	adenoma		0	1 (2) (105W)	2 (4) (105W)	0
panc islet	islet cell adenoma		1 (2) (102W)	0	1 (2) (105W)	0
[Reproductive system]						
epididymis	histiocytic sarcoma		1 (2) (105W)	1 (2) (105W)	0	1 (2) (88W)
semin ves	histiocytic sarcoma		3 (6) (102 - 105W)	0	0	1 (2) (66W)
[Special sense organs/appandage]						
Harder gl	adenoma		2 (4) (105W)	2 (4) (101 - 105W)	2 (4) (99 - 103W)	8 (16) (92 - 105W)

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	10 ppm NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	250 ppm NO. (%) (Initial - Final)
[Musculoskeletal system]						
bone	osteosarcoma		0	0	1 (2) (94W)	0
[Body cavities]						
peritoneum	hemangioendothelioma		1 (2) (103W)	0	0	0
adipose	hemangioendothelioma		0	0	0	1 (2) (92W)
[All other systems]						
other	schwannoma		0	1 (2) (105W)	0	0
	histiocytic sarcoma		0	0	0	1 (2) (105W)

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

APPENDIX O 4

NEOPLASTIC LESIONS-INCIDENCE AND TIME OF TUMOR OCCURRENCE

MOSUE : FEMALE

(2-YEAR STUDY)

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	10 ppm NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	250 ppm NO. (%) (Initial - Final)
[Integumentary system/appandage]						
skin/app	keratoacanthoma		0	0	1 (2) (103W)	0
subcutis	leiomyosarcoma		1 (2) (105W)	0	0	0
	schwannoma:malignant		0	1 (2) (104W)	0	0
	sarcoma:NOS		0	1 (2) (75W)	0	0
	hemangioendothelioma		0	0	1 (2) (105W)	2 (4) (103 - 105W)
brown fat	hemangioendothelioma		1 (2) (105W)	0	0	0
[Respiratory system]						
lung	bronchiolar-alveolar adenoma		5 (10) (100 - 105W)	2 (4) (101 - 105W)	0	1 (2) (105W)
	bronchiolar-alveolar carcinoma		0	0	2 (4) (100 - 105W)	1 (2) (105W)
[Hematopoietic system]						
lymph node	malignant lymphoma		14 (28) (74 - 105W)	10 (21) (95 - 105W)	16 (33) (75 - 105W)	10 (20) (82 - 105W)
	mastocytoma:malignant		0	1 (2) (105W)	0	0

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

STUDY NO. : 0105
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	10 ppm NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	250 ppm NO. (%) (Initial - Final)
[Hematopoietic system]						
spleen	malignant lymphoma		3 (6) (105W)	1 (2) (98W)	5 (10) (82 - 105W)	3 (6) (103 - 105W)
	hemangioendothelioma		0	0	0	1 (2) (94W)
[Digestive system]						
tongue	papilloma		1 (2) (105W)	0	0	1 (2) (105W)
stomach	papilloma		0	0	1 (2) (105W)	0
	squamous cell carcinoma		1 (2) (100W)	0	0	0
liver	hepatocellular adenoma		3 (6) (105W)	3 (6) (105W)	7 (14) (104 - 105W)	26 (52) (83 - 105W)
	cholangiocellular adenoma		0	1 (2) (82W)	0	0
	histiocytic sarcoma		1 (2) (105W)	1 (2) (94W)	1 (2) (40W)	0
	hemangioendothelioma		0	0	0	1 (2) (94W)
	hepatocellular carcinoma		0	0	0	14 (28) (83 - 105W)
[Endocrine system]						
pituitary	adenoma		9 (18) (100 - 105W)	11 (23) (68 - 105W)	4 (8) (85 - 105W)	9 (18) (91 - 105W)

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

Organ	Findings	Group Name	Control NO. (%) (Initial - Final)	10 ppm NO. (%) (Initial - Final)	50 ppm NO. (%) (Initial - Final)	250 ppm NO. (%) (Initial - Final)
[Endocrine system]						
pituitary	adenocarcinoma		1 (2) (104W)	0	1 (2) (103W)	0
[Reproductive system]						
ovary	cystadenoma		2 (4) (105W)	2 (4) (95 - 104W)	1 (2) (105W)	1 (2) (104W)
	hemangioendothelioma		0	0	1 (2) (105W)	0
	granulosa-theca cell tumor:malignant		0	0	1 (2) (105W)	0
uterus	endometrial stromal polyp		0	1 (2) (105W)	0	1 (2) (95W)
	histiocytic sarcoma		11 (22) (68 - 105W)	12 (26) (63 - 105W)	10 (20) (54 - 105W)	11 (22) (81 - 105W)
	hemangioendothelioma		0	0	0	1 (2) (94W)
vagina	papilloma		0	1 (2) (98W)	0	0
mammary gl	adenocarcinoma		1 (2) (105W)	1 (2) (105W)	1 (2) (104W)	0
[Special sense organs/appandage]						
Harder gl	adenoma		4 (8) (105W)	3 (6) (96 - 105W)	3 (6) (100 - 105W)	2 (4) (91 - 105W)

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals) (Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

APPENDIX P 1

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

RAT : MALE

(2-YEAR STUDY)

STUDY No. : 0104
ANIMAL : RAT F344
SEX : MALE

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : subcutis TUMOR : fibroma			
Overall Rates(a)	1/50(2.0)	5/50(10.0)	3/50(6.0)	5/50(10.0)
Adjusted Rates(b)	2.70	9.09	6.67	14.71
Terminal Rates(c)	1/37(2.7)	2/34(5.9)	2/30(6.7)	4/28(14.3)
Standard Rates(d)	P = 0.6056			
Prevalence Rates(d)	P = 0.0757			
Combind analysis(d)	P = 0.1231			
Cochran-Armitage Test(e)	P = 0.3032			
Fisher Exact Test(e)		P = 0.1210	P = 0.3235	P = 0.1210
	SITE : spleen TUMOR : mononuclear cell leukemia			
Overall Rates(a)	11/50(22.0)	14/50(28.0)	22/50(44.0)	27/50(54.0)
Adjusted Rates(b)	24.32	17.65	40.00	42.86
Terminal Rates(c)	9/37(24.3)	6/34(17.6)	12/30(40.0)	12/28(42.9)
Standard Rates(d)	P = 0.0022**			
Prevalence Rates(d)	P = 0.0104*			
Combind analysis(d)	P = 0.0001**			
Cochran-Armitage Test(e)	P = 0.0005**			
Fisher Exact Test(e)		P = 0.3777	P = 0.0707	P = 0.0201*
	SITE : liver TUMOR : hepatocellular adenoma			
Overall Rates(a)	3/50(6.0)	0/50(0.0)	0/50(0.0)	2/50(4.0)
Adjusted Rates(b)	6.12	0.0	0.0	7.14
Terminal Rates(c)	1/37(2.7)	0/34(0.0)	0/30(0.0)	2/28(7.1)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.3529			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.7915			
Fisher Exact Test(e)		P = 0.1325	P = 0.1325	P = 0.4909

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : pituitary gland TUMOR : adenoma			
Overall Rates(a)	16/50(32.0)	16/50(32.0)	18/50(36.0)	15/50(30.0)
Adjusted Rates(b)	27.91	33.33	30.43	32.35
Terminal Rates(c)	9/37(24.3)	11/34(32.4)	8/30(26.7)	9/28(32.1)
Standard Rates(d)	P = 0.8149			
Prevalence Rates(d)	P = 0.4215			
Combind analysis(d)	P = 0.5969			
Cochran-Armitage Test(e)	P = 0.7915			
Fisher Exact Test(e)		P = 0.4197	P = 0.4613	P = 0.4805
	SITE : pituitary gland TUMOR : adenoma,adenocarcinoma			
Overall Rates(a)	16/50(32.0)	16/50(32.0)	18/50(36.0)	15/50(30.0)
Adjusted Rates(b)	27.91	33.33	30.43	32.35
Terminal Rates(c)	9/37(24.3)	11/34(32.4)	8/30(26.7)	9/28(32.1)
Standard Rates(d)	P = 0.8149			
Prevalence Rates(d)	P = 0.4215			
Combind analysis(d)	P = 0.5969			
Cochran-Armitage Test(e)	P = 0.7915			
Fisher Exact Test(e)		P = 0.4197	P = 0.4613	P = 0.4805
	SITE : thyroid TUMOR : C-cell adenoma			
Overall Rates(a)	6/50(12.0)	10/49(20.4)	7/50(14.0)	3/50(6.0)
Adjusted Rates(b)	16.22	26.47	17.65	6.67
Terminal Rates(c)	6/37(16.2)	9/34(26.5)	5/30(16.7)	0/28(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.9289			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.0996			
Fisher Exact Test(e)		P = 0.2440	P = 0.4863	P = 0.2728

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : thyroid TUMOR : C-cell carcinoma			
Overall Rates(a)	1/50(2.0)	1/49(2.0)	3/50(6.0)	0/50(0.0)
Adjusted Rates(b)	2.70	2.38	9.38	0.0
Terminal Rates(c)	1/37(2.7)	0/34(0.0)	2/30(6.7)	0/28(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.7164			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.4236			
Fisher Exact Test(e)		P = 0.2525	P = 0.3235	P = 0.4950
	SITE : thyroid TUMOR : follicular adenocarcinoma			
Overall Rates(a)	0/50(0.0)	3/49(6.1)	0/50(0.0)	0/50(0.0)
Adjusted Rates(b)	0.0	7.69	0.0	0.0
Terminal Rates(c)	0/37(0.0)	2/34(5.9)	0/30(0.0)	0/28(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.8617			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.2268			
Fisher Exact Test(e)		P = 0.1287	P = 0.5000	P = 0.5000
	SITE : thyroid TUMOR : C-cell adenoma,C-cell carcinoma			
Overall Rates(a)	7/50(14.0)	11/49(22.4)	10/50(20.0)	3/50(6.0)
Adjusted Rates(b)	18.92	26.47	26.47	6.67
Terminal Rates(c)	7/37(18.9)	9/34(26.5)	7/30(23.3)	0/28(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.9549			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.0607			
Fisher Exact Test(e)		P = 0.2584	P = 0.3417	P = 0.1917

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : thyroid TUMOR : follicular adenoma,follicular adenocarcinoma			
Overall Rates(a)	0/50(0.0)	3/49(6.1)	0/50(0.0)	1/50(2.0)
Adjusted Rates(b)	0.0	7.69	0.0	2.94
Terminal Rates(c)	0/37(0.0)	2/34(5.9)	0/30(0.0)	0/28(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.4866			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.8250			
Fisher Exact Test(e)		P = 0.1287	P = 0.5000	P = 0.4950
	SITE : pancreas islet TUMOR : adenoma			
Overall Rates(a)	3/50(6.0)	4/50(8.0)	1/50(2.0)	3/50(6.0)
Adjusted Rates(b)	8.11	11.76	2.50	6.52
Terminal Rates(c)	3/37(8.1)	4/34(11.8)	0/30(0.0)	1/28(3.6)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.5178			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.8563			
Fisher Exact Test(e)		P = 0.4895	P = 0.3235	P = 0.3392
	SITE : pancreas islet TUMOR : adenoma,adenocarcinoma			
Overall Rates(a)	4/50(8.0)	4/50(8.0)	2/50(4.0)	4/50(8.0)
Adjusted Rates(b)	10.53	11.76	5.00	8.70
Terminal Rates(c)	3/37(8.1)	4/34(11.8)	1/30(3.3)	1/28(3.6)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.4371			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.9765			
Fisher Exact Test(e)		P = 0.3579	P = 0.3574	P = 0.3579

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : adrenal gland TUMOR : pheochromocytoma			
Overall Rates(a)	8/50(16.0)	5/50(10.0)	3/50(6.0)	3/50(6.0)
Adjusted Rates(b)	20.00	11.11	7.14	7.14
Terminal Rates(c)	7/37(18.9)	2/34(5.9)	1/30(3.3)	1/28(3.6)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.9084			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.1554			
Fisher Exact Test(e)		P = 0.3141	P = 0.1322	P = 0.1322
	SITE : adrenal gland TUMOR : pheochromocytoma,pheochromocytoma:malignant			
Overall Rates(a)	9/50(18.0)	6/50(12.0)	4/50(8.0)	5/50(10.0)
Adjusted Rates(b)	20.00	11.11	9.52	10.00
Terminal Rates(c)	7/37(18.9)	2/34(5.9)	2/30(6.7)	1/28(3.6)
Standard Rates(d)	P = 0.4237			
Prevalence Rates(d)	P = 0.7818			
Combind analysis(d)	P = 0.7528			
Cochran-Armitage Test(e)	P = 0.3555			
Fisher Exact Test(e)		P = 0.3291	P = 0.1562	P = 0.2379
	SITE : testis TUMOR : interstitial cell tumor			
Overall Rates(a)	47/50(94.0)	46/50(92.0)	45/50(90.0)	48/50(96.0)
Adjusted Rates(b)	100.00	97.30	96.67	100.00
Terminal Rates(c)	37/37(100.0)	33/34(97.1)	29/30(96.7)	28/28(100.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.0788			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.4987			
Fisher Exact Test(e)		P = 0.4723	P = 0.4976	P = 0.4722

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : mammary gland TUMOR : adenoma,fibroadenoma			
Overall Rates(a)	3/50(6.0)	2/50(4.0)	1/50(2.0)	1/50(2.0)
Adjusted Rates(b)	5.26	5.00	3.33	2.70
Terminal Rates(c)	1/37(2.7)	1/34(2.9)	1/30(3.3)	0/28(0.0)
Standard Rates(d)	P = 1.0000 ?			
Prevalence Rates(d)	P = 0.6891			
Combind analysis(d)	P = 0.7952			
Cochran-Armitage Test(e)	P = 0.3372			
Fisher Exact Test(e)		P = 0.4909	P = 0.3235	P = 0.3235
	SITE : mammary gland TUMOR : adenoma,fibroadenoma,adenocarcinoma			
Overall Rates(a)	3/50(6.0)	2/50(4.0)	1/50(2.0)	2/50(4.0)
Adjusted Rates(b)	5.26	5.00	3.33	5.41
Terminal Rates(c)	1/37(2.7)	1/34(2.9)	1/30(3.3)	1/28(3.6)
Standard Rates(d)	P = 1.0000 ?			
Prevalence Rates(d)	P = 0.4217			
Combind analysis(d)	P = 0.5506			
Cochran-Armitage Test(e)	P = 0.7593			
Fisher Exact Test(e)		P = 0.4909	P = 0.3235	P = 0.4909
	SITE : preputial/clitoral gland TUMOR : adenoma			
Overall Rates(a)	1/50(2.0)	3/50(6.0)	2/50(4.0)	0/50(0.0)
Adjusted Rates(b)	2.70	8.82	3.13	0.0
Terminal Rates(c)	1/37(2.7)	3/34(8.8)	0/30(0.0)	0/28(0.0)
Standard Rates(d)	P = 0.3584			
Prevalence Rates(d)	P = 0.8878			
Combind analysis(d)	P = 0.8609			
Cochran-Armitage Test(e)	P = 0.2020			
Fisher Exact Test(e)		P = 0.3235	P = 0.4926	P = 0.4950

(a): Number of tumor-bearing animals/number of animals examined at the site.
(b): Kaplan-Meire estimated tumor incidence at the end of the study after adjusting for intercurrent mortality.
(c): Observed tumor incidence at terminal kill.
(d): Beneath the control incidence are the Pvalues associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combind analysis : Death analysis + Incidenta ltumor test
(e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
? : The conditional probabities of the largest and smallest possible out comes can not estimated or this P-value is beyond the estimated P-value

APPENDIX P 2

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

RAT : FEMALE

(2-YEAR STUDY)

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : spleen TUMOR : mononuclear cell leukemia			
Overall Rates(a)	10/50(20.0)	17/50(34.0)	16/50(32.0)	19/50(38.0)
Adjusted Rates(b)	14.29	20.59	22.50	20.59
Terminal Rates(c)	6/42(14.3)	7/34(20.6)	7/34(20.6)	7/34(20.6)
Standard Rates(d)	P = 0.0486*			
Prevalence Rates(d)	P = 0.3153			
Combind analysis(d)	P = 0.0571			
Cochran-Armitage Test(e)	P = 0.1397			
Fisher Exact Test(e)		P = 0.1636	P = 0.2039	P = 0.1027
	SITE : pituitary gland TUMOR : adenoma			
Overall Rates(a)	12/50(24.0)	16/49(32.7)	16/50(32.0)	11/50(22.0)
Adjusted Rates(b)	23.81	40.00	35.29	17.78
Terminal Rates(c)	10/42(23.8)	13/34(38.2)	12/34(35.3)	4/34(11.8)
Standard Rates(d)	P = 0.1261			
Prevalence Rates(d)	P = 0.8709			
Combind analysis(d)	P = 0.7045			
Cochran-Armitage Test(e)	P = 0.4466			
Fisher Exact Test(e)		P = 0.3088	P = 0.3253	P = 0.4826
	SITE : pituitary gland TUMOR : adenoma,adenocarcinoma			
Overall Rates(a)	13/50(26.0)	18/49(36.7)	17/50(34.0)	11/50(22.0)
Adjusted Rates(b)	23.81	42.86	38.24	17.78
Terminal Rates(c)	10/42(23.8)	14/34(41.2)	13/34(38.2)	4/34(11.8)
Standard Rates(d)	P = 0.2823			
Prevalence Rates(d)	P = 0.9023			
Combind analysis(d)	P = 0.8167			
Cochran-Armitage Test(e)	P = 0.2672			
Fisher Exact Test(e)		P = 0.2657	P = 0.3333	P = 0.4450

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : thyroid TUMOR : C-cell adenoma			
Overall Rates(a)	4/50(8.0)	2/50(4.0)	1/50(2.0)	3/49(6.1)
Adjusted Rates(b)	8.89	5.71	2.44	8.82
Terminal Rates(c)	3/42(7.1)	1/34(2.9)	0/34(0.0)	3/34(8.8)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.4429			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.9939			
Fisher Exact Test(e)		P = 0.3574	P = 0.1998	P = 0.4788
	SITE : thyroid TUMOR : C-cell carcinoma			
Overall Rates(a)	1/50(2.0)	3/50(6.0)	0/50(0.0)	1/49(2.0)
Adjusted Rates(b)	2.38	8.33	0.0	2.38
Terminal Rates(c)	1/42(2.4)	2/34(5.9)	0/34(0.0)	0/34(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.6763			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.5587			
Fisher Exact Test(e)		P = 0.3235	P = 0.4950	P = 0.2525
	SITE : thyroid TUMOR : C-cell adenoma,C-cell carcinoma			
Overall Rates(a)	5/50(10.0)	5/50(10.0)	1/50(2.0)	4/49(8.2)
Adjusted Rates(b)	11.11	13.89	2.44	9.52
Terminal Rates(c)	4/42(9.5)	3/34(8.8)	0/34(0.0)	3/34(8.8)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.5940			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.7241			
Fisher Exact Test(e)		P = 0.3710	P = 0.1210	P = 0.4763

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : adrenal gland TUMOR : pheochromocytoma,pheochromocytoma:malignant			
Overall Rates(a)	1/50(2.0)	2/50(4.0)	2/50(4.0)	3/50(6.0)
Adjusted Rates(b)	2.38	2.94	5.88	8.82
Terminal Rates(c)	1/42(2.4)	1/34(2.9)	2/34(5.9)	3/34(8.8)
Standard Rates(d)	P = 0.5431			
Prevalence Rates(d)	P = 0.0920			
Combind analysis(d)	P = 0.1520			
Cochran-Armitage Test(e)	P = 0.3580			
Fisher Exact Test(e)		P = 0.4926	P = 0.4926	P = 0.3235
	SITE : uterus TUMOR : endometrial stromal polyp			
Overall Rates(a)	8/50(16.0)	3/50(6.0)	2/50(4.0)	3/50(6.0)
Adjusted Rates(b)	17.39	7.32	4.17	6.98
Terminal Rates(c)	7/42(16.7)	2/34(5.9)	1/34(2.9)	2/34(5.9)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.8706			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.2452			
Fisher Exact Test(e)		P = 0.1322	P = 0.0671	P = 0.1322
	SITE : uterus TUMOR : endometrial stromal polyp,endometrial stromal sarcoma			
Overall Rates(a)	8/50(16.0)	3/50(6.0)	4/50(8.0)	3/50(6.0)
Adjusted Rates(b)	17.39	7.32	4.26	6.98
Terminal Rates(c)	7/42(16.7)	2/34(5.9)	1/34(2.9)	2/34(5.9)
Standard Rates(d)	P = 0.4683			
Prevalence Rates(d)	P = 0.8709			
Combind analysis(d)	P = 0.8614			
Cochran-Armitage Test(e)	P = 0.2594			
Fisher Exact Test(e)		P = 0.1322	P = 0.2169	P = 0.1322

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : mammary gland TUMOR : adenoma			
Overall Rates(a)	4/50(8.0)	0/50(0.0)	1/50(2.0)	0/50(0.0)
Adjusted Rates(b)	8.51	0.0	2.94	0.0
Terminal Rates(c)	3/42(7.1)	0/34(0.0)	1/34(2.9)	0/34(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.9602			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.0972			
Fisher Exact Test(e)		P = 0.0688	P = 0.1998	P = 0.0688
	SITE : mammary gland TUMOR : fibroadenoma			
Overall Rates(a)	3/50(6.0)	13/50(26.0)	1/50(2.0)	0/50(0.0)
Adjusted Rates(b)	7.14	31.43	2.94	0.0
Terminal Rates(c)	3/42(7.1)	10/34(29.4)	1/34(2.9)	0/34(0.0)
Standard Rates(d)	P = 0.5209			
Prevalence Rates(d)	P = 0.9991			
Combind analysis(d)	P = 0.9993			
Cochran-Armitage Test(e)	P = 0.0029**			
Fisher Exact Test(e)		P = 0.0175*	P = 0.3235	P = 0.1325
	SITE : mammary gland TUMOR : adenoma,fibroadenoma			
Overall Rates(a)	7/50(14.0)	13/50(26.0)	2/50(4.0)	0/50(0.0)
Adjusted Rates(b)	14.89	31.43	5.88	0.0
Terminal Rates(c)	6/42(14.3)	10/34(29.4)	2/34(5.9)	0/34(0.0)
Standard Rates(d)	P = 0.5209			
Prevalence Rates(d)	P = 0.9999			
Combind analysis(d)	P = 0.9999			
Cochran-Armitage Test(e)	P = 0.0005**			
Fisher Exact Test(e)		P = 0.1634	P = 0.1045	P = 0.0101*

Group Name	Control	50 ppm	200 ppm	600 ppm
	SITE : mammary gland TUMOR : adenoma,fibroadenoma,adenocarcinoma			
Overall Rates(a)	7/50(14.0)	14/50(28.0)	2/50(4.0)	0/50(0.0)
Adjusted Rates(b)	14.89	31.43	5.88	0.0
Terminal Rates(c)	6/42(14.3)	10/34(29.4)	2/34(5.9)	0/34(0.0)
Standard Rates(d)	P = 0.5209			
Prevalence Rates(d)	P = 0.9999			
Combind analysis(d)	P = 1.0000			
Cochran-Armitage Test(e)	P = 0.0004**			
Fisher Exact Test(e)		P = 0.1246	P = 0.1045	P = 0.0101*

(a): Number of tumor-bearing animals/number of animals examined at the site.
(b): Kaplan-Meire estimated tumor incidence at the end of the study after adjusting for intercurrent mortality.
(c): Observed tumor incidence at terminal kill.
(d): Beneath the control incidence are the Pvalues associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combind analysis : Death analysis + Incidenta ltumor test
(e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
? : The conditional probabities of the largest and smallest possible out comes can not estimated or this P-value is beyond the estimated P-value
——— : There is no date which should be statistic analysis
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

APPENDIX P 3

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

MOSUE: MALE

(2-YEAR STUDY)

STUDY No. : 0105
ANIMAL : MOUSE BDF1
SEX : MALE

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : lung TUMOR : bronchiolar-alveolar adenoma			
Overall Rates(a)	9/50(18.0)	7/50(14.0)	5/50(10.0)	4/50(8.0)
Adjusted Rates(b)	27.27	20.00	14.29	9.38
Terminal Rates(c)	8/31(25.8)	7/35(20.0)	4/28(14.3)	1/22(4.5)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.8423			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.1926			
Fisher Exact Test(e)		P = 0.4234	P = 0.2379	P = 0.1562
	SITE : lung TUMOR : bronchiolar-alveolar carcinoma			
Overall Rates(a)	2/50(4.0)	3/50(6.0)	3/50(6.0)	0/50(0.0)
Adjusted Rates(b)	3.23	7.89	7.14	0.0
Terminal Rates(c)	1/31(3.2)	2/35(5.7)	2/28(7.1)	0/22(0.0)
Standard Rates(d)	P = 0.6586			
Prevalence Rates(d)	P = 0.8793			
Combind analysis(d)	P = 0.9181			
Cochran-Armitage Test(e)	P = 0.1172			
Fisher Exact Test(e)		P = 0.4909	P = 0.4909	P = 0.2574
	SITE : lung TUMOR : bronchiolar-alveolar adenoma,bronchiolar-alveolar carcinoma			
Overall Rates(a)	11/50(22.0)	10/50(20.0)	8/50(16.0)	4/50(8.0)
Adjusted Rates(b)	30.30	26.32	21.43	9.38
Terminal Rates(c)	9/31(29.0)	9/35(25.7)	6/28(21.4)	1/22(4.5)
Standard Rates(d)	P = 0.6586			
Prevalence Rates(d)	P = 0.9465			
Combind analysis(d)	P = 0.9593			
Cochran-Armitage Test(e)	P = 0.0468*			
Fisher Exact Test(e)		P = 0.4833	P = 0.3526	P = 0.0777

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : lymph node TUMOR : malighant lymphoma			
Overall Rates(a)	9/50(18.0)	7/50(14.0)	7/50(14.0)	9/50(18.0)
Adjusted Rates(b)	16.13	11.43	14.29	18.18
Terminal Rates(c)	5/31(16.1)	4/35(11.4)	4/28(14.3)	4/22(18.2)
Standard Rates(d)	P = 0.2947			
Prevalence Rates(d)	P = 0.1889			
Combind analysis(d)	P = 0.1635			
Cochran-Armitage Test(e)	P = 0.7176			
Fisher Exact Test(e)		P = 0.4234	P = 0.4234	P = 0.3993
	SITE : spleen TUMOR : hemangioendothelioma			
Overall Rates(a)	1/50(2.0)	1/50(2.0)	3/50(6.0)	5/50(10.0)
Adjusted Rates(b)	3.23	0.0	6.38	12.00
Terminal Rates(c)	1/31(3.2)	0/35(0.0)	0/28(0.0)	2/22(9.1)
Standard Rates(d)	P = 0.5167			
Prevalence Rates(d)	P = 0.0177*			
Combind analysis(d)	P = 0.0340*			
Cochran-Armitage Test(e)	P = 0.0420*			
Fisher Exact Test(e)		P = 0.2475	P = 0.3235	P = 0.1210
	SITE : spleen TUMOR : hemangioendothelioma:benign,hemangioendothelioma			
Overall Rates(a)	2/50(4.0)	2/50(4.0)	3/50(6.0)	6/50(12.0)
Adjusted Rates(b)	6.45	2.86	6.38	12.90
Terminal Rates(c)	2/31(6.5)	1/35(2.9)	0/28(0.0)	2/22(9.1)
Standard Rates(d)	P = 0.5167			
Prevalence Rates(d)	P = 0.0276*			
Combind analysis(d)	P = 0.0458*			
Cochran-Armitage Test(e)	P = 0.0608			
Fisher Exact Test(e)		P = 0.3088	P = 0.4909	P = 0.1606

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : liver TUMOR : hepatocellular adenoma			
Overall Rates(a)	7/50(14.0)	13/50(26.0)	8/50(16.0)	26/50(52.0)
Adjusted Rates(b)	15.22	34.29	20.59	77.27
Terminal Rates(c)	4/31(12.9)	12/35(34.3)	5/28(17.9)	17/22(77.3)
Standard Rates(d)	P = 1.0000 ?			
Prevalence Rates(d)	P < 0.0001**			
Combind analysis(d)	P < 0.0001**			
Cochran-Armitage Test(e)	P < 0.0001**			
Fisher Exact Test(e)		P = 0.1634	P = 0.4854	P = 0.0029**
	SITE : liver TUMOR : hemangioendothelioma			
Overall Rates(a)	1/50(2.0)	1/50(2.0)	5/50(10.0)	5/50(10.0)
Adjusted Rates(b)	0.0	2.17	3.57	13.64
Terminal Rates(c)	0/31(0.0)	0/35(0.0)	1/28(3.6)	3/22(13.6)
Standard Rates(d)	P = 0.2158			
Prevalence Rates(d)	P = 0.0270*			
Combind analysis(d)	P = 0.0332*			
Cochran-Armitage Test(e)	P = 0.0883			
Fisher Exact Test(e)		P = 0.2475	P = 0.1210	P = 0.1210
	SITE : liver TUMOR : hepatocellular carcinoma			
Overall Rates(a)	7/50(14.0)	8/50(16.0)	12/50(24.0)	25/50(50.0)
Adjusted Rates(b)	16.13	16.67	25.00	45.45
Terminal Rates(c)	5/31(16.1)	5/35(14.3)	7/28(25.0)	10/22(45.5)
Standard Rates(d)	P = 0.0010**			
Prevalence Rates(d)	P = 0.0002**			
Combind analysis(d)	P < 0.0001**			
Cochran-Armitage Test(e)	P < 0.0001**			
Fisher Exact Test(e)		P = 0.4854	P = 0.2119	P = 0.0041**

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : liver TUMOR : hepatocellular adenoma,hepatocellular carcinoma			
Overall Rates(a)	13/50(26.0)	21/50(42.0)	19/50(38.0)	40/50(80.0)
Adjusted Rates(b)	26.47	50.00	39.39	90.91
Terminal Rates(c)	8/31(25.8)	17/35(48.6)	11/28(39.3)	20/22(90.9)
Standard Rates(d)	P = 0.0020**			
Prevalence Rates(d)	P < 0.0001**			
Combind analysis(d)	P < 0.0001**			
Cochran-Armitage Test(e)	P < 0.0001**			
Fisher Exact Test(e)		P = 0.1615	P = 0.2359	P = 0.0018**
	SITE : seminal vesicle TUMOR : histiocytic sarcoma			
Overall Rates(a)	3/50(6.0)	0/50(0.0)	0/50(0.0)	1/50(2.0)
Adjusted Rates(b)	6.45	0.0	0.0	0.0
Terminal Rates(c)	2/31(6.5)	0/35(0.0)	0/28(0.0)	0/22(0.0)
Standard Rates(d)	P = 0.2253			
Prevalence Rates(d)	P = 0.8578			
Combind analysis(d)	P = 0.4815			
Cochran-Armitage Test(e)	P = 0.7649			
Fisher Exact Test(e)		P = 0.1325	P = 0.1325	P = 0.3235
	SITE : Harderian gland TUMOR : adenoma			
Overall Rates(a)	2/50(4.0)	2/50(4.0)	2/50(4.0)	8/50(16.0)
Adjusted Rates(b)	6.45	5.26	6.45	23.08
Terminal Rates(c)	2/31(6.5)	1/35(2.9)	0/28(0.0)	4/22(18.2)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.0024**			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.0046**			
Fisher Exact Test(e)		P = 0.3088	P = 0.3088	P = 0.0671

(a): Number of tumor-bearing animals/number of animals examined at the site.
(b): Kaplan-Meire estimated tumor incidence at the end of the study after adjusting for intercurrent mortality.
(c): Observed tumor incidence at terminal kill.
(d): Beneath the control incidence are the Pvalues associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combind analysis : Death analysis + Incidenta ltumor test
(e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
? : The conditional probabities of the largest and smallest possible out comes can not estimated or this P-value is beyond the estimated P-value

STUDY No. : 0105
ANIMAL : MOUSE BDF1
SEX : MALE

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : ALL SITE TUMOR : hemangioendothelioma:benign			
Overall Rates(a)	2/50(4.0)	1/50(2.0)	1/50(2.0)	1/50(2.0)
Adjusted Rates(b)	5.26	2.86	2.38	3.23
Terminal Rates(c)	1/31(3.2)	1/35(2.9)	0/28(0.0)	0/22(0.0)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.5888			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.7291			
Fisher Exact Test(e)		P = 0.4926	P = 0.4926	P = 0.4926
	SITE : ALL SITE TUMOR : malighant lymphoma			
Overall Rates(a)	10/50(20.0)	7/50(14.0)	7/50(14.0)	9/50(18.0)
Adjusted Rates(b)	19.35	11.43	14.29	18.18
Terminal Rates(c)	6/31(19.4)	4/35(11.4)	4/28(14.3)	4/22(18.2)
Standard Rates(d)	P = 0.2947			
Prevalence Rates(d)	P = 0.2385			
Combind analysis(d)	P = 0.1951			
Cochran-Armitage Test(e)	P = 0.8325			
Fisher Exact Test(e)		P = 0.3417	P = 0.3417	P = 0.4839
	SITE : ALL SITE TUMOR : hemangioendothelioma			
Overall Rates(a)	2/50(4.0)	1/50(2.0)	6/50(12.0)	8/50(16.0)
Adjusted Rates(b)	3.23	0.0	5.26	20.00
Terminal Rates(c)	1/31(3.2)	0/35(0.0)	1/28(3.6)	4/22(18.2)
Standard Rates(d)	P = 0.2946			
Prevalence Rates(d)	P = 0.0016**			
Combind analysis(d)	P = 0.0070**			
Cochran-Armitage Test(e)	P = 0.0130*			
Fisher Exact Test(e)		P = 0.4926	P = 0.1606	P = 0.0671

(a): Number of tumor-bearing animals/number of animals examined at the site.
(b): Kaplan-Meire estimated tumor incidence at the end of the study after adjusting for intercurrent mortality.
(c): Observed tumor incidence at terminal kill.
(d): Beneath the control incidence are the Pvalues associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combind analysis : Death analysis + Incidenta ltumor test
(e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
? : The conditional probabities of the largest and smallest possible out comes can not estimated or this P-value is beyond the estimated P-value
------ : There is no data which should be statistic analysis

APPENDIX P 4

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

MOSUE : FEMALE

(2-YEAR STUDY)

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : lung TUMOR : bronchiolar-alveolar adenoma			
Overall Rates(a)	5/50(10.0)	2/47(4.3)	0/49(0.0)	1/50(2.0)
Adjusted Rates(b)	12.82	6.67	0.0	5.88
Terminal Rates(c)	3/32(9.4)	1/27(3.7)	0/22(0.0)	1/17(5.9)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.8446			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.2034			
Fisher Exact Test(e)		P = 0.2690	P = 0.0378*	P = 0.1210
	SITE : lung TUMOR : bronchiolar-alveolar adenoma,bronchiolar-alveolar carcinoma			
Overall Rates(a)	5/50(10.0)	2/47(4.3)	2/49(4.1)	2/50(4.0)
Adjusted Rates(b)	12.82	6.67	6.90	11.76
Terminal Rates(c)	3/32(9.4)	1/27(3.7)	1/22(4.5)	2/17(11.8)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.6500			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.4552			
Fisher Exact Test(e)		P = 0.2690	P = 0.2510	P = 0.2425
	SITE : lymph node TUMOR : malighant lymphoma			
Overall Rates(a)	14/50(28.0)	10/47(21.3)	16/49(32.7)	10/50(20.0)
Adjusted Rates(b)	22.86	25.93	27.27	17.65
Terminal Rates(c)	7/32(21.9)	7/27(25.9)	6/22(27.3)	3/17(17.6)
Standard Rates(d)	P = 0.2111			
Prevalence Rates(d)	P = 0.7303			
Combind analysis(d)	P = 0.3966			
Cochran-Armitage Test(e)	P = 0.3913			
Fisher Exact Test(e)		P = 0.3576	P = 0.4367	P = 0.3071

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : spleen TUMOR : malighant lymphoma			
Overall Rates(a)	3/50(6.0)	1/47(2.1)	5/48(10.4)	3/50(6.0)
Adjusted Rates(b)	9.38	0.0	9.09	5.88
Terminal Rates(c)	3/32(9.4)	0/27(0.0)	2/22(9.1)	1/17(5.9)
Standard Rates(d)	P = 0.1477			
Prevalence Rates(d)	P = 0.4432			
Combind analysis(d)	P = 0.2031			
Cochran-Armitage Test(e)	P = 0.8517			
Fisher Exact Test(e)		P = 0.3471	P = 0.3578	P = 0.3392
	SITE : liver TUMOR : hepatocellular adenoma			
Overall Rates(a)	3/50(6.0)	3/47(6.4)	7/49(14.3)	26/49(53.1)
Adjusted Rates(b)	9.38	11.11	30.43	64.00
Terminal Rates(c)	3/32(9.4)	3/27(11.1)	6/22(27.3)	9/17(52.9)
Standard Rates(d)	P = -------			
Prevalence Rates(d)	P < 0.0001**?			
Combind analysis(d)	P = -------			
Cochran-Armitage Test(e)	P < 0.0001**			
Fisher Exact Test(e)		P = 0.3673	P = 0.1836	P = 0.0001**
	SITE : liver TUMOR : hepatocellular carcinoma			
Overall Rates(a)	0/50(0.0)	0/47(0.0)	0/49(0.0)	14/49(28.6)
Adjusted Rates(b)	0.0	0.0	0.0	23.33
Terminal Rates(c)	0/32(0.0)	0/27(0.0)	0/22(0.0)	3/17(17.6)
Standard Rates(d)	P < 0.0001**?			
Prevalence Rates(d)	P < 0.0001**?			
Combind analysis(d)	P < 0.0001**?			
Cochran-Armitage Test(e)	P < 0.0001**			
Fisher Exact Test(e)		P = 0.5000	P = 0.5000	P = 0.0001**

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : liver TUMOR : hepatocellular adenoma,hepatocellular carcinoma			
Overall Rates(a)	3/50(6.0)	3/47(6.4)	7/49(14.3)	33/49(67.3)
Adjusted Rates(b)	9.38	11.11	30.43	69.70
Terminal Rates(c)	3/32(9.4)	3/27(11.1)	6/22(27.3)	10/17(58.8)
Standard Rates(d)	P < 0.0001**?			
Prevalence Rates(d)	P < 0.0001**?			
Combind analysis(d)	P < 0.0001**?			
Cochran-Armitage Test(e)	P < 0.0001**			
Fisher Exact Test(e)		P = 0.3673	P = 0.1836	P < 0.0001**
	SITE : pituitary gland TUMOR : adenoma			
Overall Rates(a)	9/49(18.4)	11/47(23.4)	4/48(8.3)	9/50(18.0)
Adjusted Rates(b)	23.08	31.03	13.64	27.78
Terminal Rates(c)	7/32(21.9)	8/27(29.6)	3/22(13.6)	4/17(23.5)
Standard Rates(d)	P = 0.0154*			
Prevalence Rates(d)	P = 0.6810			
Combind analysis(d)	P = 0.2327			
Cochran-Armitage Test(e)	P = 0.9190			
Fisher Exact Test(e)		P = 0.4032	P = 0.1655	P = 0.3839
	SITE : uterus TUMOR : histiocytic sarcoma			
Overall Rates(a)	11/50(22.0)	12/47(25.5)	10/49(20.4)	11/50(22.0)
Adjusted Rates(b)	9.38	14.81	8.00	11.76
Terminal Rates(c)	3/32(9.4)	4/27(14.8)	1/22(4.5)	2/17(11.8)
Standard Rates(d)	P = 0.3283			
Prevalence Rates(d)	P = 0.5439			
Combind analysis(d)	P = 0.3747			
Cochran-Armitage Test(e)	P = 0.8778			
Fisher Exact Test(e)		P = 0.4643	P = 0.4662	P = 0.4072

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : Harderian gland TUMOR : adenoma			
Overall Rates(a)	4/50(8.0)	3/47(6.4)	3/49(6.1)	2/50(4.0)
Adjusted Rates(b)	12.50	8.57	10.34	5.88
Terminal Rates(c)	4/32(12.5)	1/27(3.7)	2/22(9.1)	1/17(5.9)
Standard Rates(d)	P = ------			
Prevalence Rates(d)	P = 0.7361			
Combind analysis(d)	P = ------			
Cochran-Armitage Test(e)	P = 0.4405			
Fisher Exact Test(e)		P = 0.4567	P = 0.4788	P = 0.3574

(HPT360A)

BAIS2

(a): Number of tumor-bearing animals/number of animals examined at the site.
(b): Kaplan-Meire estimated tumor incidence at the end of the study after adjusting for intercurrent mortality.
(c): Observed tumor incidence at terminal kill.
(d): Beneath the control incidence are the Pvalues associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combind analysis : Death analysis + Incidenta ltumor test
(e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
? : The conditional probabities of the largest and smallest possible out comes can not estimated or this P-value is beyond the estimated P-value
------ : There is no date which should be statistic analysis
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

STUDY No. : 0105
ANIMAL : MOUSE BDF1
SEX : FEMALE

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

Group Name	Control	10 ppm	50 ppm	250 ppm
	SITE : ALL SITE TUMOR : malighant lymphoma			
Overall Rates(a)	17/50(34.0)	11/47(23.4)	21/49(42.9)	13/50(26.0)
Adjusted Rates(b)	31.43	25.93	36.36	23.53
Terminal Rates(c)	10/32(31.3)	7/27(25.9)	8/22(36.4)	4/17(23.5)
Standard Rates(d)	P = 0.1222			
Prevalence Rates(d)	P = 0.7122			
Combind analysis(d)	P = 0.2719			
Cochran-Armitage Test(e)	P = 0.4812			
Fisher Exact Test(e)		P = 0.2613	P = 0.3399	P = 0.3333
	SITE : ALL SITE TUMOR : hemangioendothelioma			
Overall Rates(a)	1/50(2.0)	0/47(0.0)	2/49(4.1)	3/50(6.0)
Adjusted Rates(b)	3.13	0.0	9.09	5.88
Terminal Rates(c)	1/32(3.1)	0/27(0.0)	2/22(9.1)	1/17(5.9)
Standard Rates(d)	P = 0.0092**?			
Prevalence Rates(d)	P = 0.2357			
Combind analysis(d)	P = 0.0286*			
Cochran-Armitage Test(e)	P = 0.1244			
Fisher Exact Test(e)		P = 0.4796	P = 0.5000	P = 0.3235

(HPT360)

BAIS2

(a): Number of tumor-bearing animals/number of animals examined at the site.
(b): Kaplan-Meire estimated tumor incidence at the end of the study after adjusting for intercurrent mortality.
(c): Observed tumor incidence at terminal kill.
(d): Beneath the control incidence are the Pvalues associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combind analysis : Death analysis + Incidenta ltumor test
(e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
? : The conditional probabities of the largest and smallest possible out comes can not estimated or this P-value is beyond the estimated P-value
——— : There is no date which should be statistic analysis
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

APPENDIX Q 1

IDENTITY AND PURITY OF TETRACHLOROETHYLENE

PERFORMED AT THE JAPAN BIOASSAY LABORATORY

(2-YEAR STUDY)

INDENTITY AND PURITY OF TETRACHLOROETHYLENE PERFORMED AT THE JAPANBIOASSAY LABORATORY(TWO-YEAR STUDIES)

A.Lot no.PDL5382

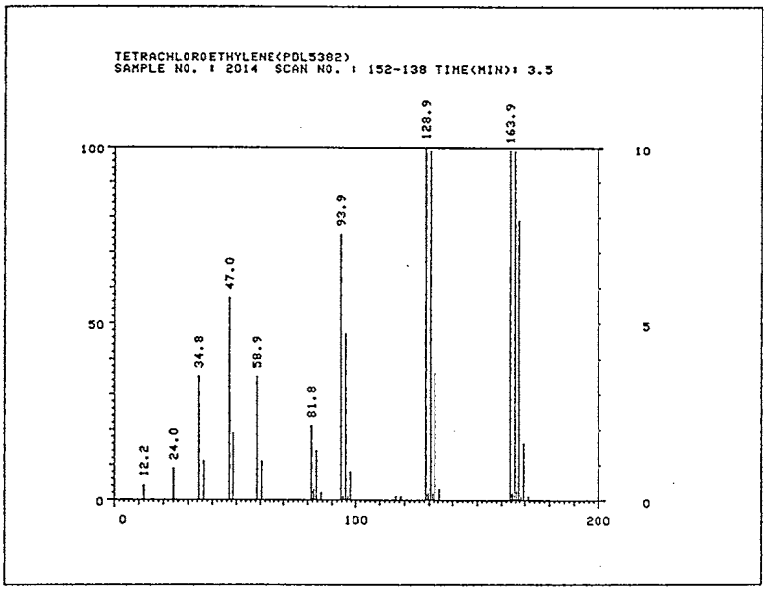
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

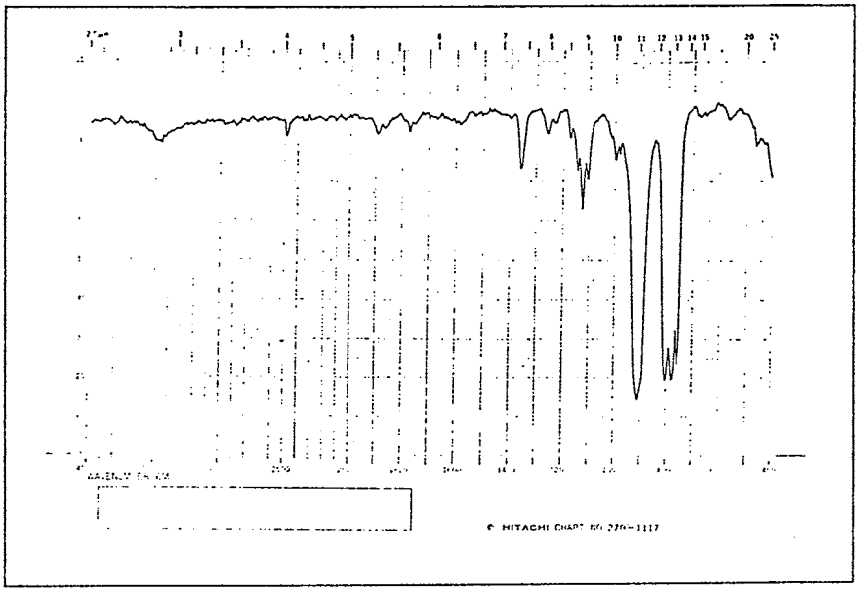
	Molecule Weight
Theory	165.8(JAPAN PHARMACOPOEIA X I)
	163.9(Calculated without isotope)
Determined	
Test Substance	163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

Results:

Determined	Literature Values
Wave Number (CM^{-1})	
Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

2. Gas Chromatography

Instrument:	Hewlett Packard 5890A
Column:	Methyl Silicone(0.2mmϕ ×50m)
Column Temperature:	180°C
Flow Rate:	1ml/min
Detector:	FID(Hydrogen Flame Ionization)
Injection Volume:	1μl

Results: Major peak and two impurities

Peak No.	Retention Time(min)	Retention Time Relative to Maijor Peak	AREA (percent of major peak)
1	3.245	0.93	0.065
2	3.37	0.96	0.15
3	3.498	1.00	100

3. Conclusions: The results of the Mass spectra agreed with the theoretical values and the infrared spectra agreed with the Litrature values.
Gas chromtography indicated two impurities with areas totaling<0.3% of the major peak.

INDENTITY AND PURITY OF TETRACHLOROETHYLENE PERFORMED AT THE JAPANBIOASSAY LABORATORY(TWO-YEAR STUDIES)

B.Lot no.PDJ5835

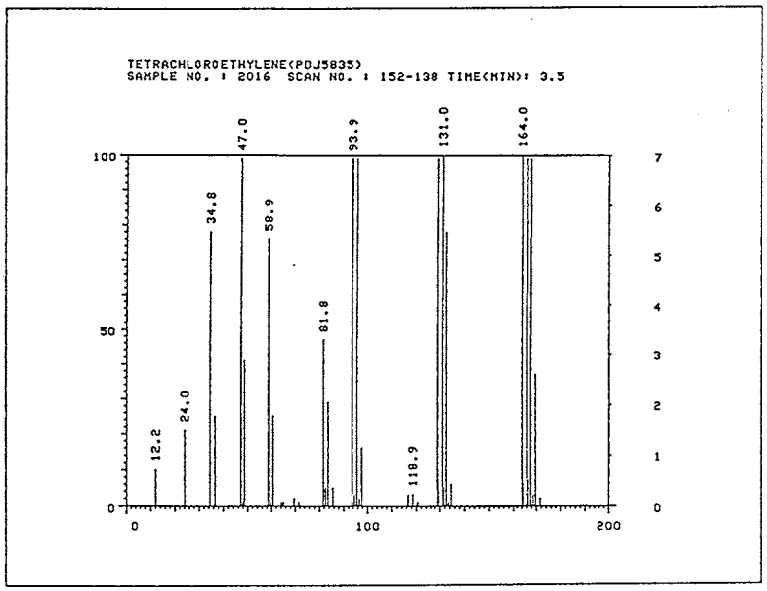
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

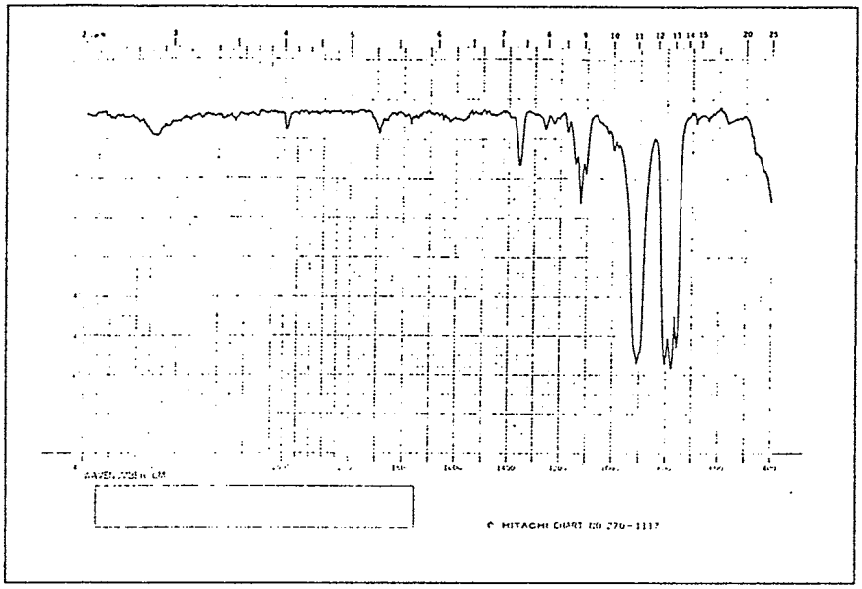
	Molecule Weight
Theory	165.8(JAPAN PHARMACOPOEIA X I)
	163.9(Calculated without isotope)
Determined	
Test Substance	164.0

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

Results:

Determined	Literature Values
Wave Number (CM^{-1})	
Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

2. Gas Chromatography

Instrument:	Hewlett Packard 5890A
Column:	Methyl Silicone(0.2mmϕ ×50m)
Column Temperature:	180°C
Flow Rate:	1ml/min
Detector:	FID(Hydrogen Flame Ionization)
Injection Volume:	1μl

Results: Major peak and two impurities

Peak No.	Retention Time(min)	Retention Time Relative to Maijor Peak	AREA (percent of major peak)
1	3.24	0.93	0.068
2	3.368	0.96	0.15
3	3.497	1.00	100

3. Conclusions: The results of the Mass spectra agreed with the theoretical values and the infrared spectra agreed with the Litrature values.
Gas chromtography indicated two impurities with areas totaling<0.3% of the major peak.

INDENTITY AND PURITY OF TETRACHLOROETHYLENE PERFORMED AT THE JAPANBIOASSAY LABORATORY(TWO-YEAR STUDIES)

C.Lot no.CTQ5124

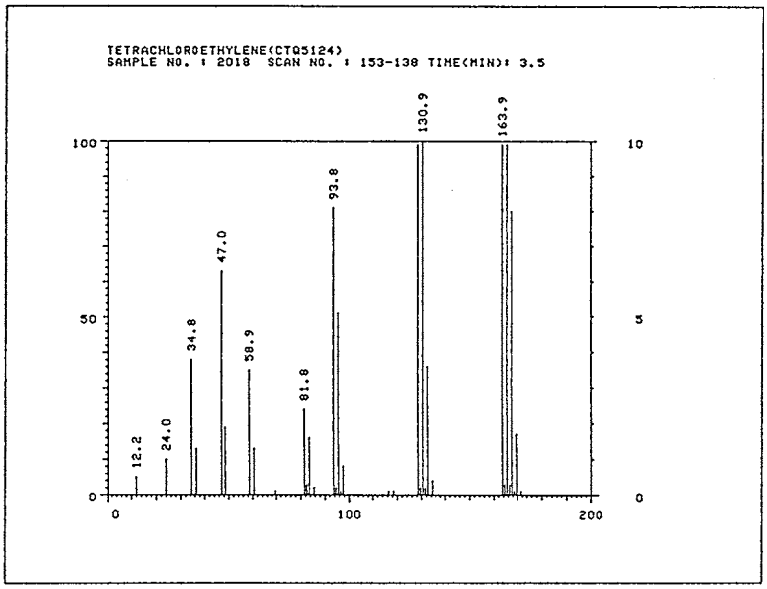
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

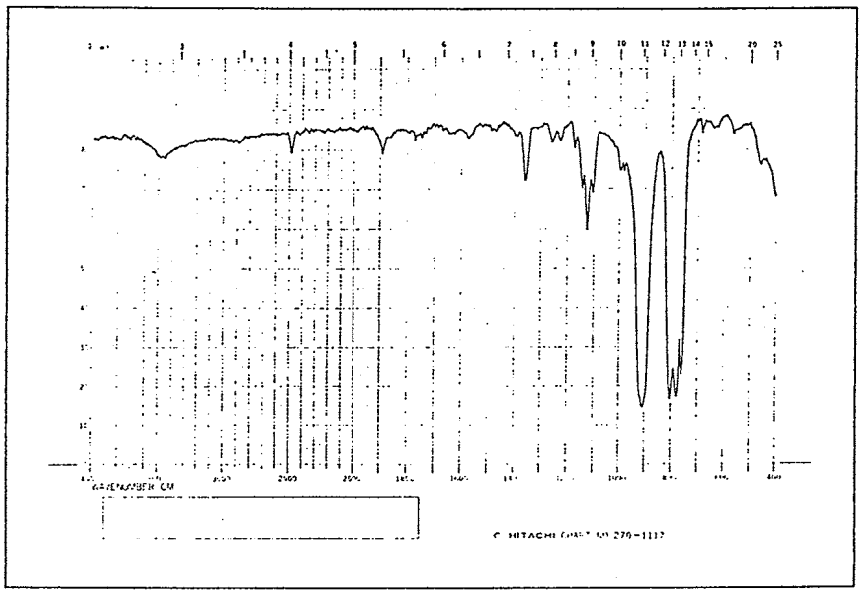
	Molecule Weight
Theory	165.8(JAPAN PHARMACOPOEIA X I)
	163.9(Calculated without isotope)
Determined	
Test Substance	163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

Results:

Determined	Literature Values
Wave Number (CM^{-1})	
Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

2. Gas Chromatography

Instrument:	Hewlett Packard 5890A
Column:	Methyl Silicone(0.2mmϕ ×50m)
Column Temperature:	180°C
Flow Rate:	1ml/min
Detector:	FID(Hydrogen Flame Ionization)
Injection Volume:	1μl

Results: Major peak and two impurities

Peak No.	Retention Time(min)	Retention Time Relative to Maijor Peak	AREA (percent of major peak)
1	3.25	0.93	0.065
2	3.37	0.96	0.15
3	3.495	1.00	100

3. Conclusions: The results of the Mass spectra agreed with the theoretical values and the infrared spectra agreed with the Litrature values.
Gas chromtography indicated two impurities with areas totaling<0.3% of the major peak.

INDENTITY AND PURITY OF TETRACHLOROETHYLENE PERFORMED AT THE JAPANBIOASSAY LABORATORY(TWO-YEAR STUDIES)

D.Lot no.CTN5675

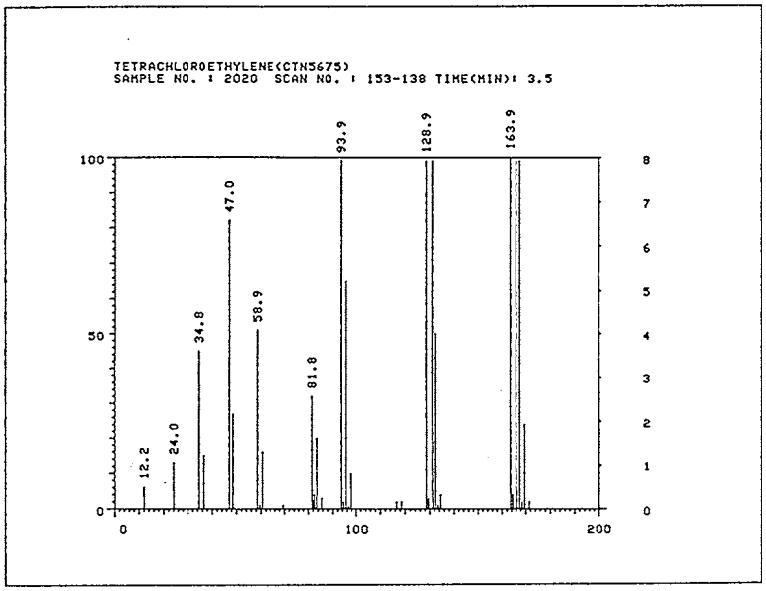
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

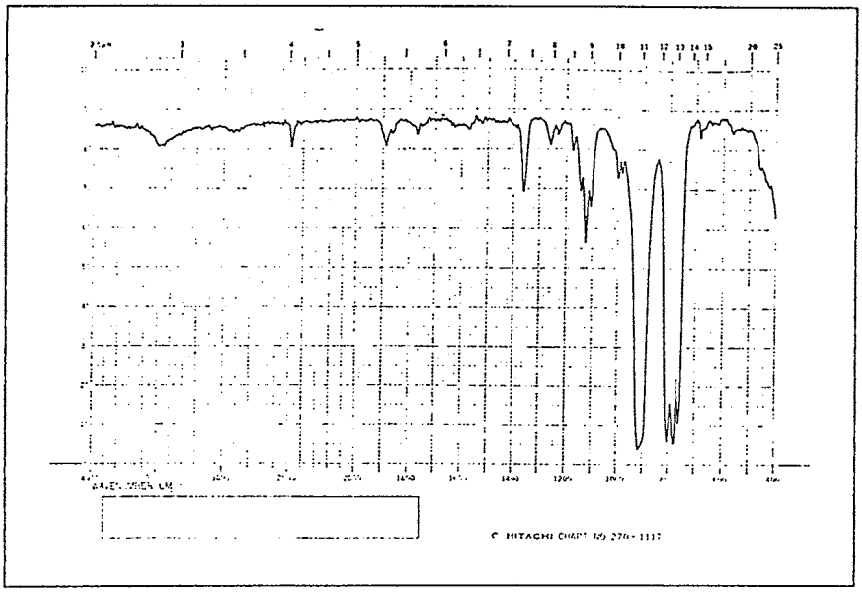
	Molecule Weight
Theory	165.8(JAPAN PHARMACOPOEIA X I)
	163.9(Calculated without isotope)
Determined	
Test Substance	163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

Results:

Determined	Literature Values
Wave Number (CM^{-1})	
Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

2. Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Peak No.	Retention Time(min)	Retention Time Relative to Maijor Peak	AREA (percent of major peak)
1	3.245	0.93	0.064
2	3.367	0.96	0.15
3	3.495	1.00	100

3. Conclusions: The results of the Mass spectra agreed with the theoretical values and the infrared spectra agreed with the Litrature values.
Gas chromtography indicated two impurities with areas totaling<0.3% of the major peak.

INDENTITY AND PURITY OF TETRACHLOROETHYLENE PERFORMED AT THE JAPANBIOASSAY LABORATORY(TWO-YEAR STUDIES)

E.Lot no.CTJ4392

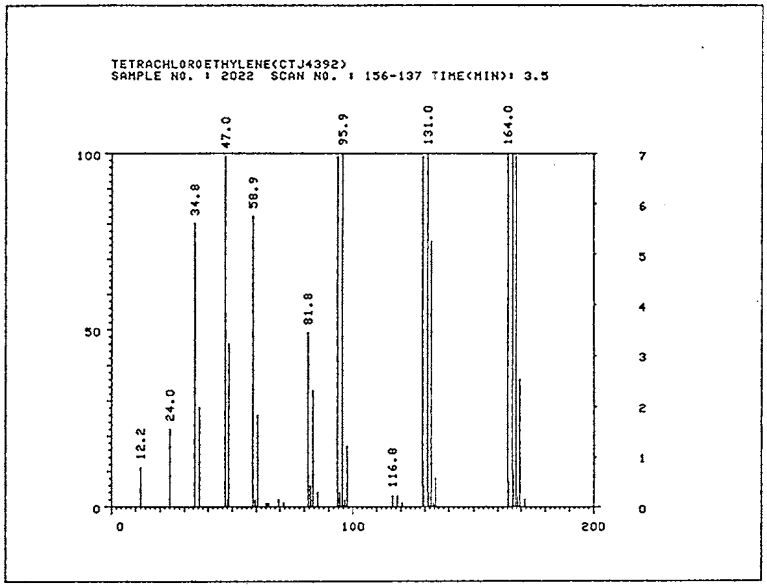
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

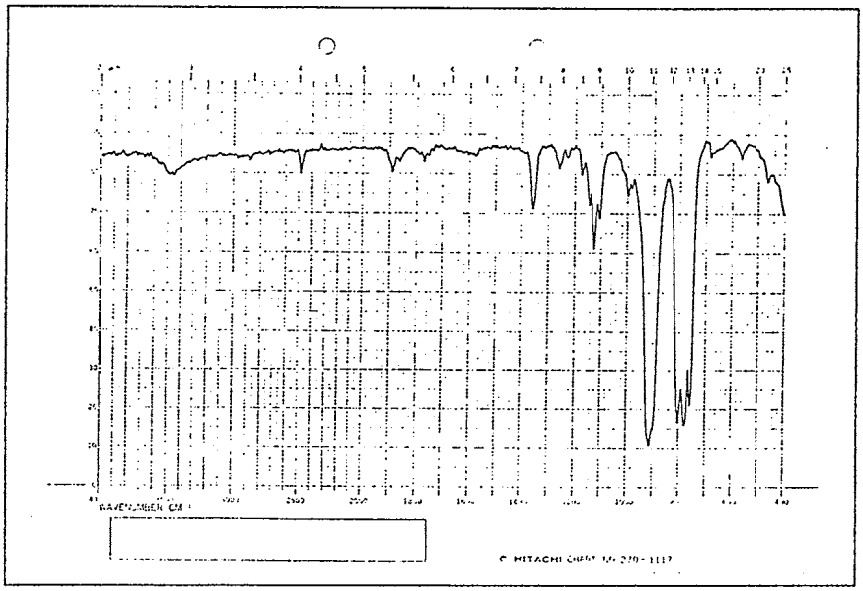
	Molecule Weight
Theory	165.8(JAPAN PHARMACOPOEIA X I)
	163.9(Calculated without isotope)
Determined	
Test Substance	164.0

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

Results:

Determined	Literature Values
Wave Number (CM^{-1})	
Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

2. Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Peak No.	Retention Time(min)	Retention Time Relative to Maijor Peak	AREA (percent of major peak)
1	3.243	0.93	0.061
2	3.368	0.96	0.15
3	3.495	1.00	100

3. Conclusions: The results of the Mass spectra agreed with the theoretical values and the infrared spectra agreed with the Litrature values.
Gas chromtography indicated two impurities with areas totaling<0.3% of the major peak.

INDENTITY AND PURITY OF TETRACHLOROETHYLENE PERFORMED AT THE JAPANBIOASSAY LABORATORY(TWO-YEAR STUDIES)

F.Lot no.CTF5106

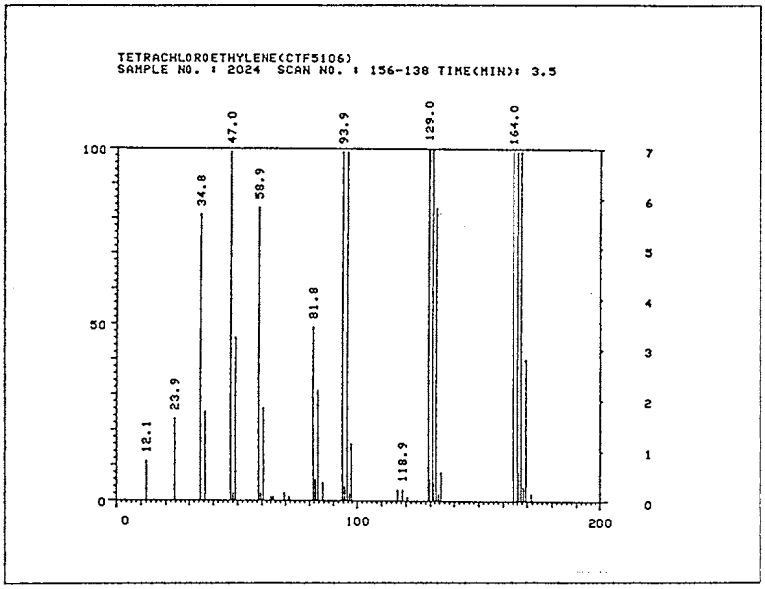
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

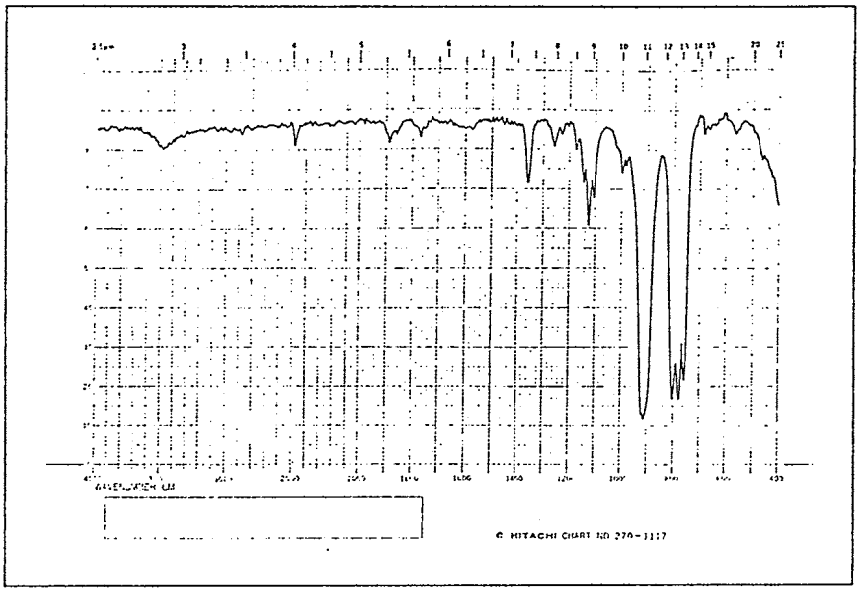
	Molecule Weight
Theory	165.8(JAPAN PHARMACOPOEIA X I)
	163.9(Calculated without isotope)
Determined	
Test Substance	164.0

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

Results:

Determined	Literature Values
Wave Number (CM^{-1})	
Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

2. Gas Chromatography

Instrument:	Hewlett Packard 5890A
Column:	Methyl Silicone(0.2mmϕ ×50m)
Column Temperature:	180°C
Flow Rate:	1ml/min
Detector:	FID(Hydrogen Flame Ionization)
Injection Volume:	1μl

Results: Major peak and two impurities

Peak No.	Retention Time(min)	Retention Time Relative to Maijor Peak	AREA (percent of major peak)
1	3.24	0.93	0.065
2	3.363	0.96	0.16
3	3.488	1.00	100

3. Conclusions: The results of the Mass spectra agreed with the theoretical values and the infrared spectra agreed with the Litrature values.
Gas chromtography indicated two impurities with areas totaling<0.3% of the major peak.

INDENTITY AND PURITY OF TETRACHLOROETHYLENE PERFORMED AT THE JAPANBIOASSAY LABORATORY(TWO-YEAR STUDIES)

G.Lot no.SAN5885

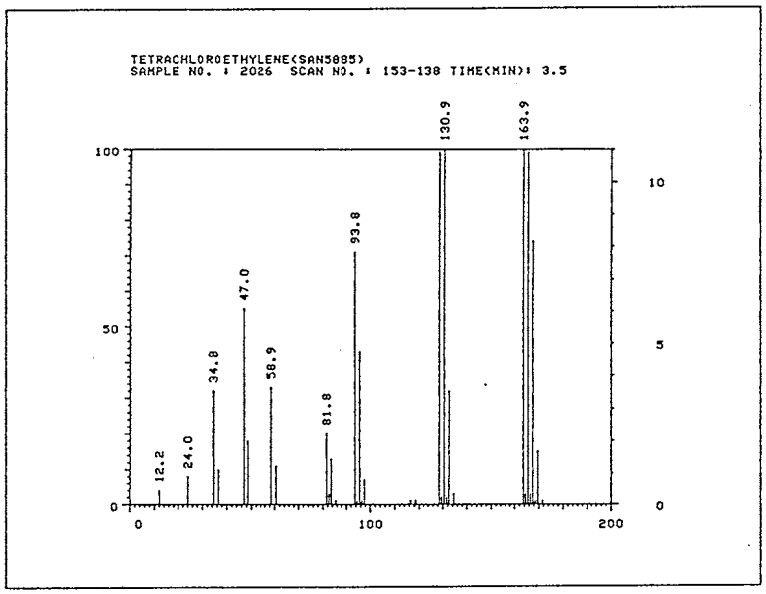
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

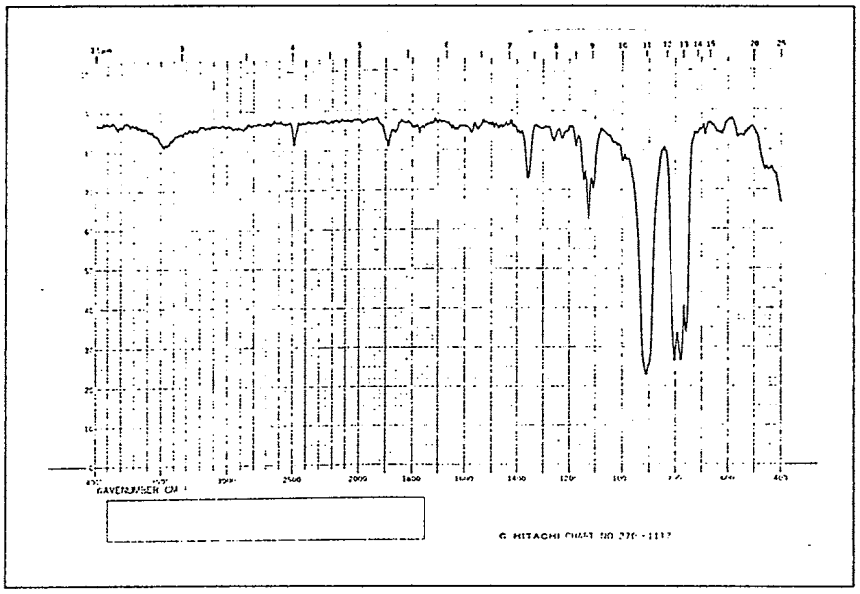
	Molecule Weight
Theory	165.8(JAPAN PHARMACOPOEIA X I)
	163.9(Calculated without isotope)
Determined	
Test Substance	163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

Results:

Determined	Literature Values
Wave Number (CM^{-1})	
Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

Results: Major peak and two impurities

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
04/20/90	3.238	0.93	0.064
	3.363	0.96	0.15
	3.49	1.00	100
09/04/90	3.243	0.93	0.061
	3.363	0.96	0.15
	3.488	1.00	100

4. Conclusions: Gas chlomatography indicates two impurities with areas totaling<0.3% of the major peak.The infrared spectra agreed with the previous determine of test values.

Consequently,Tetrachloroethylene was stable as the chemical when stored for about 5 month at temperatures to 5°C.

APPENDIX Q 2

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY

(2-YEAR STUDY)

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY
(TWO-WEEK STUDIES)

A.Lot no.PDL5382

1.Sample storage: Tetrachloroethylene were stored for about 4 month at 5°C.

	Previous determined of test (07/14/88)	After determined of test (11/22/88)

2.Spectral data

Infrared

Instrument: Hitachi 270-30

Cell: Fixed thickness Cell(NaCl)

Slit: Medium

Results:

Wave Number (CM^{-1})	
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
07/14/88	3.245	0.93	0.065
	3.37	0.96	0.15
	3.498	1.00	100
11/22/88	3.248	0.93	0.065
	3.37	0.96	0.15
	3.498	1.00	100

4. Conclusions: Gas chlomatography indicates two impurities with areas totaling<0.3% of the major peak.The infrared spectra agreed with the previous determine of test values.

Consequently,Tetrachloroethylene was stable as the chemical when stored for about 4 month at temperatures to 5°C.

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY
(TWO-WEEK STUDIES)

B.Lot no.PDJ5835

1.Sample storage: Tetrachloroethylene were stored for about 5 month at 5°C.

	Previous determined of test (10/05/88)	After determined of test (03/09/89)

2.Spectral data

Infrared

Instrument: Hitachi 270-30

Cell: Fixed thickness Cell(NaCl)

Slit: Medium

Results:

Wave Number (CM^{-1})	
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
10/05/88	3.24	0.93	0.068
	3.368	0.96	0.15
	3.497	1.00	100
03/09/89	3.247	0.93	0.061
	3.37	0.96	0.15
	3.497	1.00	100

4. Conclusions: Gas chlomatography indicates two impurities with areas totaling<0.3% of the major peak.The infrared spectra agreed with the previous determine of test values.

Consequently,Tetrachloroethylene was stable as the chemical when stored for about 5 month at temperatures to 5°C.

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY
(TWO-WEEK STUDIES)

C.Lot no.CTQ5124

1.Sample storage: Tetrachloroethylene were stored for about 4 month at 5°C.

	Previous determined of test (02/15/89)	After determined of test (06/23/89)

2.Spectral data

Infrared

Instrument: Hitachi 270-30

Cell: Fixed thickness Cell(NaCl)

Slit: Medium

Results:

Wave Number (CM^{-1})	
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
02/15/89	3.25	0.93	0.065
	3.37	0.96	0.15
	3.495	1.00	100
06/23/89	3.25	0.93	0.065
	3.37	0.96	0.15
	3.495	1.00	100

4. Conclusions: Gas chlomatography indicates two impurities with areas totaling<0.3% of the major peak.The infrared spectra agreed with the previous determine of test values.

Consequently,Tetrachloroethylene was stable as the chemical when stored for about 4 month at temperatures to 5°C.

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY
(TWO-WEEK STUDIES)

D.Lot no.CTN5675

1.Sample storage: Tetrachloroethylene were stored for about 4 month at 5°C.

	Previous determined of test (05/17/89)	After determined of test (10/02/89)

2.Spectral data

Infrared

Instrument: Hitachi 270-30

Cell: Fixed thickness Cell(NaCl)

Slit: Medium

Results:

Wave Number (CM^{-1})	
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
05/17/89	3.245	0.93	0.064
	3.367	0.96	0.15
	3.495	1.00	100
10/02/89	3.247	0.93	0.068
	3.37	0.96	0.15
	3.495	1.00	100

4. Conclusions: Gas chlomatography indicates two impurities with areas totaling<0.3% of the major peak.The infrared spectra agreed with the previous determine of test values.

Consequently,Tetrachloroethylene was stable as the chemical when stored for about 4 month at temperatures to 5°C.

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY
(TWO-WEEK STUDIES)

E.Lot no.CTJ4392

1.Sample storage: Tetrachloroethylene were stored for about 4 month at 5°C.

	Previous determined of test (09/28/89)	After determined of test (01/22/90)

2.Spectral data

Infrared

Instrument: Hitachi 270-30

Cell: Fixed thickness Cell(NaCl)

Slit: Medium

Results:

Wave Number (CM^{-1})	
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
09/28/89	3.243	0.93	0.061
	3.368	0.96	0.15
	3.495	1.00	100
01/22/90	3.245	0.93	0.068
	3.367	0.96	0.15
	3.493	1.00	100

4. Conclusions: Gas chlomatography indicates two impurities with areas totaling<0.3% of the major peak.The infrared spectra agreed with the previous determine of test values.

Consequently,Tetrachloroethylene was stable as the chemical when stored for about 4 month at temperatures to 5°C.

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY
(TWO-WEEK STUDIES)

F.Lot no.CTF5106

1.Sample storage: Tetrachloroethylene were stored for about 4 month at 5°C.

	Previous determined of test (01/09/90)	After determined of test (05/14/90)

2.Spectral data

Infrared

Instrument: Hitachi 270-30

Cell: Fixed thickness Cell(NaCl)

Slit: Medium

Results:

Wave Number (CM^{-1})	
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

Results: Major peak and two impurities

Date	Retention Time(min)	Retention Time Relative to Major Peak	Area (percent of Major peak)
01/09/90	3.24	0.93	0.065
	3.363	0.96	0.16
	3.488	1.00	100
05/14/90	3.243	0.93	0.068
	3.363	0.96	0.15
	3.49	1.00	100

4. Conclusions: Gas chlomatography indicates two impurities with areas totaling<0.3% of the major peak.The infrared spectra agreed with the previous determine of test values.

Consequently,Tetrachloroethylene was stable as the chemical when stored for about 4 month at temperatures to 5°C.

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY
(TWO-WEEK STUDIES)

G.Lot no.SAN5885

1.Sample storage: Tetrachloroethylene were stored for about 5 month at 5°C.

	Previous determined of test (04/20/90)	After determined of test (09/04/90)

2.Spectral data

Infrared

Instrument: Hitachi 270-30

Cell: Fixed thickness Cell(NaCl)

Slit: Medium

Results:

Wave Number (CM^{-1})	
750～ 820	750～ 820
860～ 950	860～ 950
1080～1180	1080～1180
1240～1280	1240～1280
1340～1380	1340～1380
1860～1920	1860～1920
2450～2500	2450～2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A

Column: Methyl Silicone(0.2mmϕ ×50m)

Column Temperature: 180°C

Flow Rate: 1ml/min

Detector: FID(Hydrogen Flame Ionization)

Injection Volume: 1μl

2. Gas Chromatography

Instrument:	Hewlett Packard 5890A
Column:	Methyl Silicone(0.2mmϕ ×50m)
Column Temperature:	180°C
Flow Rate:	1ml/min
Detector:	FID(Hydrogen Flame Ionization)
Injection Volume:	1μl

Results: Major peak and two impurities

Peak No.	Retention Time(min)	Retention Time Relative to Maijor Peak	AREA (percent of major peak)
1	3.238	0.93	0.064
2	3.363	0.96	0.15
3	3.49	1.00	100

3. Conclusions: The results of the Mass spectra agreed with the theoretical values and the infrared spectra agreed with the Litrature values.
Gas chromtography indicated two impurities with areas totaling<0.3% of the major peak.

APPENDIX R 1

CONCENTRATION OF TETRACHLOROETHYLENE IN INHALATION CHAMBER

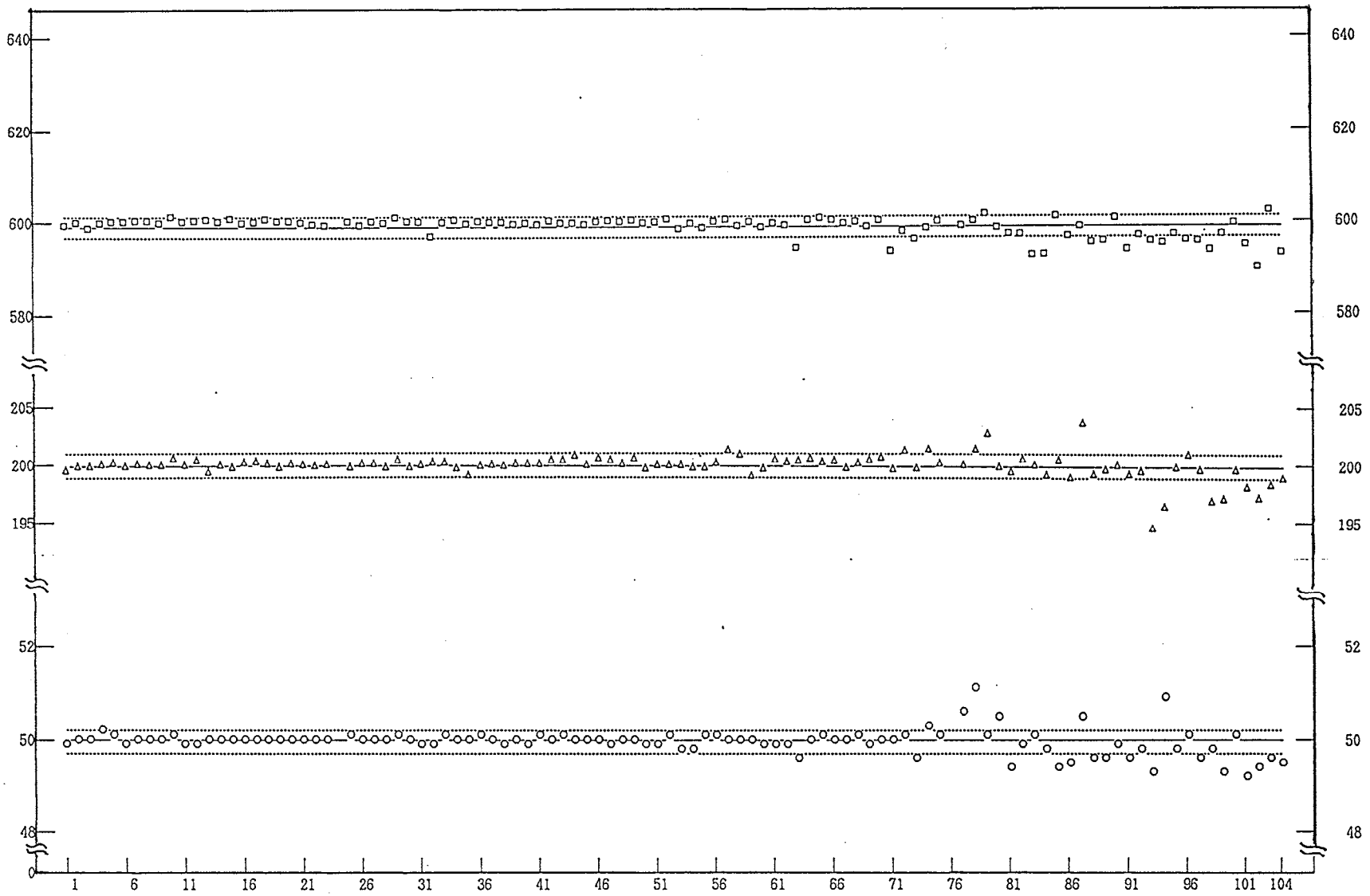
(2-YEAR STUDY)

CONCENTRATION OF 1,2-DICHLOROETHANE IN INHALATION CHAMBER
(RAT : TWO-YEAR STUDIES)

Group Name	Concentration(ppm) Mean	±	S.D.
Control	0.0	±	0.0
50ppm	49.9	±	0.6
200ppm	199.8	±	1.8
600ppm	598.9	±	4.9

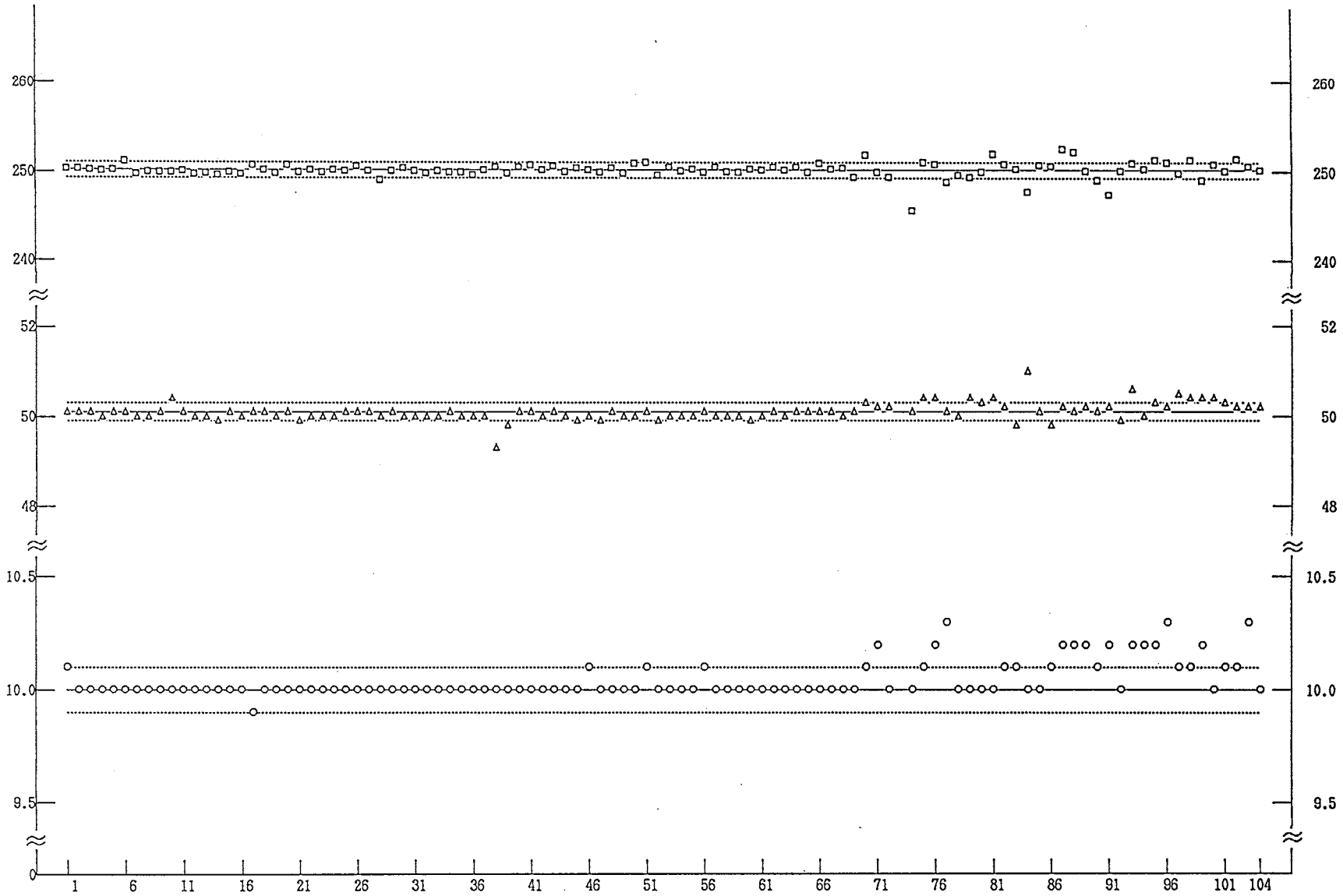
CONCENTRATION OF 1,2-DICHLOROETHANE IN INHALATION CHAMBER
(MOUSE : TWO-YEAR STUDIES)

Group Name	Concentration(ppm) Mean	±	S.D.
Control	0.0	±	0.0
10ppm	10.0	±	0.1
50ppm	50.1	±	0.3
250ppm	250.2	±	1.6



STUDY NO : 0104
UNIT : p p m
PERIOD : 88/07/21～90/07/18
UNIT NO : C01

CONCENTRATION OF TEST SUBSTANCE IN INHALATION(CONC1)



STUDY NO : 0105
UNIT : p p m
PERIOD : 88/08/12～90/08/09
UNIT NO : C01

CONCENTRATION OF TEST SUBSTANCE IN INHALATION(CONC1)

APPENDIX R 2

ENVIRONMENT OF INHALATION CHAMBER

(2-YEAR STUDY)

ENVIRONMENT OF INHALATION CHAMBER

(RAT : TWO-YEAR STUDIES)

Group Name	TEMPERATURE(℃) MEAN ± S.D.	HUMIDITY(%) MEAN ± S.D.	VENTILATION RATE(ℓ/min) MEAN ± S.D.	ROOM AIR CHANGE(time/h) MEAN
Control	24.2 ± 0.2	54.5 ± 1.7	1130.2 ± 15.2	8.9
50ppm	24.2 ± 0.3	56.7 ± 1.5	1131.7 ± 20.8	8.9
200ppm	23.9 ± 0.2	56.3 ± 1.9	1131.5 ± 13.4	8.9
600ppm	24.3 ± 0.2	55.7 ± 1.5	1128.8 ± 24.1	8.9

ENVIRONMENT OF INHALATION CHAMBER

(MOUSE : TWO-YEAR STUDIES)

Group Name	TEMPERATURE(℃) MEAN ± S.D.	HUMIDITY(%) MEAN ± S.D.	VENTILATION RATE(ℓ/min) MEAN ± S.D.	ROOM AIR CHANGE(time/h) MEAN
Control	23.9 ± 0.2	55.1 ± 1.2	555.6 ± 11.0	9.0
10ppm	24.0 ± 0.1	55.4 ± 1.1	557.2 ± 7.1	9.0
50ppm	24.1 ± 0.2	55.6 ± 1.1	555.9 ± 6.8	9.0
250ppm	23.9 ± 0.2	54.6 ± 1.4	555.7 ± 7.4	9.0

APPENDIX S 1

NUTRIENTS IN RAT AND MOUSE FEED

(2-YEAR STUDY)

NUTRIENTS IN RAT AND MOUSE FEED[-1)]

Nutrients	Lot No. of Feed Analyzed for Nutrients.[-2)] Pellet														
	630657	630761	630957	631058	631152	890156	890352	890558	890703	890801	890901	891108	900303	900508	900608
Moisture level(%)	7.9	7.5	7.2	6.8	7.6	6.8	7.8	7.9	8.1	7.4	7.6	7.7	7.5	7.5	7.2
Crude protein(%)	23.4	23.0	22.9	22.3	22.6	22.2	22.5	23.0	22.5	23.2	23.7	23.5	22.4	22.8	23.6
Crude fat(%)	6.2	6.0	5.8	5.9	5.8	5.6	5.7	5.9	6.0	6.2	6.1	5.7	6.0	6.5	6.5
Crude ash(%)	6.7	6.0	6.5	6.6	6.5	6.5	6.4	6.7	6.8	6.8	6.6	6.7	6.6	6.6	6.9
Crude fiber(%)	3.6	3.3	3.2	3.3	3.3	3.6	3.2	3.3	3.5	3.8	3.0	3.6	3.3	3.1	3.6
Nitrogen-free extract(%)	52.2	53.6	54.4	55.1	54.2	55.3	54.4	53.2	53.1	52.6	53.0	52.8	54.2	53.5	55.2

-1) FEED : CRF-1 (ORIENTAL YEAST CO.,LTD)

-2) All lots (15 lots) of feed used in rat and mouse study were analyzed for nutrients.

APPENDIX S 2

CONTAMINANTS IN RAT AND MOUSE FEED

(2-YEAR STUDY)

CONTAMINANTS IN RAT AND MOUSE FEED[-1)]

Contaminants	Maximum Tolerable Levels[-2)]	Lot No. of Feed Analyzed for Contaminants.[-3)]							
		630657	630761	630957	631058	631152	890156	890352	890558
Total mercury(ppb)	100ppb	ND[-4)]	ND	ND	ND	ND	ND	ND	ND
Cadmium(ppb)	160ppb	70	70	70	60	60	60	60	60
Lead(ppm)	1.5ppm	0.18	0.09	0.17	0.14	0.14	0.14	0.17	0.09
Arsenic=As_2O_3(ppm)	1.0ppm	0.7	0.4	0.4	0.4	0.4	0.3	0.4	0.4
DDT(ppb)	100ppb	ND	ND	ND	ND	ND	ND	ND	ND
Dieldrin(ppb)	20ppb	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor(ppb)	20ppb	ND	ND	ND	ND	ND	ND	ND	ND
Malathion(ppm)	2.5ppm	0.32	0.28	0.32	0.27	0.29	0.10	0.13	0.24
Aflatoxin$B_{1,2}$,$G_{1,2}$(ppb)	5ppb	ND	ND	ND	ND	ND	ND	ND	ND
PCB(ppb)	50ppb	ND	ND	ND	ND	ND	ND	ND	ND
Selenium(ppm)	0.6ppm	0.57	0.53	0.49	0.47	0.51	0.46	0.45	0.43
Estradiol(ppb)	1ppb	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitoroso -dimethylamine(ppb)	10ppb	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitoroso -diethylamine(ppb)	10ppb	ND	ND	ND	ND	ND	ND	ND	ND
γ-BHC(ppb)	20ppb	ND	ND	ND	ND	ND	ND	ND	ND

-1) FEED : CRF-1 (ORIENTAL YEAST CO.,LTD)
-2) These values have been stipulated by protocol.
-3) All lots (15 lots) of feed used in study were analyzed for contaminants.
-4) ND : Not detected

CONTAMINANTS IN RAT AND MOUSE FEED[-1)]

Contaminants	Maximum Tolerable Levels[-2)]	Lot No. of Feed Analyzed for Contaminants.[-3)]						
		890703	890801	090901	891108	900303	900508	900608
Total mercury(ppb)	100ppb	ND[-4)]	ND	ND	ND	ND	ND	ND
Cadmium(ppb)	160ppb	90	70	40	70	90	50	40
Lead(ppm)	1.5ppm	0.16	0.12	0.13	0.09	0.09	0.10	0.10
Arsenic=As_2O_3(ppm)	1.0ppm	0.3	0.3	0.3	0.3	0.3	0.3	0.3
DDT(ppb)	100ppb	ND	ND	ND	ND	ND	ND	ND
Dieldrin(ppb)	20ppb	ND	ND	ND	ND	ND	ND	ND
Heptachlor(ppb)	20ppb	ND	ND	ND	ND	ND	ND	ND
Malathion(ppm)	2.5ppm	0.51	0.31	0.26	0.15	0.18	0.27	0.21
Aflatoxin$B_{1,2}$,$G_{1,2}$(ppb)	5ppb	ND	ND	ND	ND	ND	ND	ND
PCB(ppb)	50ppb	ND	ND	ND	ND	ND	ND	ND
Selenium(ppm)	0.6ppm	0.45	0.35	0.51	0.55	0.53	0.45	0.42
Estradiol(ppb)	1ppb	ND	ND	ND	ND	ND	ND	ND
N-Nitoroso -dimethylamine(ppb)	10ppb	ND	ND	ND	ND	ND	ND	ND
N-Nitoroso -diethylamine(ppb)	10ppb	ND	ND	ND	ND	ND	ND	ND
γ-BHC(ppb)	20ppb	ND	ND	ND	ND	ND	ND	ND

-1) FEED : CRF-1 (ORIENTAL YEAST CO.,LTD)
-2) These values have been stipulated by study protocol.
-3) All lots (15 lots) of feed used in study were analyzed for contaminants.
-4) ND : Not detected

APPENDIX T 1

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

(2-YEAR STUDY)

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

(Two-Week Studies and Thirteen-Week Studies)

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

1) Automatic blood cell analyzer (Coulter counter SP : Coulter Electronics Inc.,USA)

2) Automatic blood cell differential analyzer (Hematrak 590 : Geometric Data a Smithkline Company, USA)

3) Automatic analyzer (Hitachi 705 : Hitachi,Ltd.,Japan)

4) Flame photometer (Hitachi 750 : Hitachi,Ltd.,Japan)

5) Ames reagent strips for urinalysis (Multistix, Uro-Labstix : Miles Sankyo Co.,Ltd.,Japan)

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

(Two-Year Studies)

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

1) Automatic blood cell analyzer (Technicon H-1 : Technicon Instruments Corporation, USA)

2) Automatic blood cell differential analyzer (Hitachi 8200 : Hitachi, Ltd., Japan)

3) Automatic analyzer (Hitachi 705 : Hitachi, Ltd., Japan)

4) Flame photometer (Hitachi 750 : Hitachi, Ltd., Japan)

5) Ames reagent strips for urinalysis (Multistix, Uro-Labstix : Miles Sankyo Co., Ltd., Japan)

APPENDIX T 2

UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

(2-YEAR STUDY)

UNITS AND DECIMNAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

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