１，１，１－トリクロロエタ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

試験番号:ラット/0189；マウス/0190

APPENDIX

(J1～Q2)

APPENDIXES (CONTINUED)

APPENDIXES (CONTINUED)

APPENDIXES (CONTINUED)

APPENDIX J 1

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : DEAD AND MORIBUND ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0189
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				200ppm				800ppm				3200ppm			
		No. of Animals on Study	16				14				14				22			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																		
nasal cavit			<16>				<14>				<14>				<22>			
	thrombus		4	0	0	0	4	2	0	0	3	0	0	0	11	0	0	0
			(25)	(0)	(0)	(0)	(29)	(14)	(0)	(0)	(21)	(0)	(0)	(0)	(50)	(0)	(0)	(0)
	eosinophilic change:olfactory epithelium		8	0	0	0	7	3	0	0	7	2	0	0	0	0	0	0 **
			(50)	(0)	(0)	(0)	(50)	(21)	(0)	(0)	(50)	(14)	(0)	(0)	(0)	(0)	(0)	(0)
	inflammation:foreign body		6	0	0	0	6	1	0	0	3	0	0	0	3	0	0	0
			(38)	(0)	(0)	(0)	(43)	(7)	(0)	(0)	(21)	(0)	(0)	(0)	(14)	(0)	(0)	(0)
	inflammation:respiratory epithelium		2	0	0	0	2	0	0	0	2	0	0	0	1	0	0	0
			(13)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
lung			<16>				<14>				<14>				<22>			
	congestion		3	0	0	0	2	0	0	0	2	0	0	0	2	0	0	0
			(19)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(9)	(0)	(0)	(0)
	inflammation		0	0	0	0	0	1	0	0	1	1	0	0	2	0	1	0
			(0)	(0)	(0)	(0)	(0)	(7)	(0)	(0)	(7)	(7)	(0)	(0)	(9)	(0)	(5)	(0)
	accumulation of foamy cells		1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
			(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(9)	(0)	(0)	(0)
	bronchiolar-alveolar cell hyperplasia		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(13)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	16				14				14				22			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
[Respiratory system]																		
lung			<16>				<14>				<14>				<22>			
	thickening:alveolar wall		0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(9)	(0)	(0)	(0)
[Hematopoietic system]																		
bone marrow			<16>				<14>				<14>				<22>			
	increased hematopoiesis		5	0	0	0	2	0	0	0	0	0	0	0	9	0	0	0
			(31)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(41)	(0)	(0)	(0)
	reticulosis		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
lymph node			<16>				<14>				<14>				<22>			
	lymphadenitis		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
spleen			<16>				<14>				<14>				<22>			
	deposit of hemosiderin		10	2	0	0	9	4	0	0	8	2	0	0	8	1	0	0
			(63)	(13)	(0)	(0)	(64)	(29)	(0)	(0)	(57)	(14)	(0)	(0)	(36)	(5)	(0)	(0)
	fibrosis		0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(9)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	16				14				14				22			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]																		
spleen			<16>				<14>				<14>				<22>			
	extramedullary hematopoiesis		4	2	1	1	6	0	1	0	8	0	0	0	4	1	1	9
			(25)	(13)	(6)	(6)	(43)	(0)	(7)	(0)	(57)	(0)	(0)	(0)	(18)	(5)	(5)	(41)
[Circulatory system]																		
heart			<16>				<14>				<14>				<22>			
	thrombus		1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0
			(6)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(9)	(0)	(0)	(0)
	necrosis:focal		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(13)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	mineralization		1	0	0	0	2	1	0	0	2	0	0	0	1	1	0	0
			(6)	(0)	(0)	(0)	(14)	(7)	(0)	(0)	(14)	(0)	(0)	(0)	(5)	(5)	(0)	(0)
	myocardial fibrosis		8	2	0	0	8	3	0	0	10	1	0	0	12	3	0	0
			(50)	(13)	(0)	(0)	(57)	(21)	(0)	(0)	(71)	(7)	(0)	(0)	(55)	(14)	(0)	(0)
[Digestive system]																		
tongue			<16>				<14>				<14>				<22>			
	mineralization		0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 16				200ppm 14				800ppm 14				3200ppm 22			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
stomach			<16>				<14>				<14>				<22>			
	atrophy		11 (69)	0 (0)	0 (0)	0 (0)	13 (93)	0 (0)	0 (0)	0 (0)	13 (93)	0 (0)	0 (0)	0 (0)	15 (68)	0 (0)	0 (0)	0 (0)
	ulcer:forestomach		4 (25)	1 (6)	1 (6)	0 (0)	3 (21)	1 (7)	0 (0)	0 (0)	1 (7)	2 (14)	0 (0)	0 (0)	2 (9)	0 (0)	0 (0)	0 (0)
	hyperplasia:forestomach		4 (25)	0 (0)	0 (0)	0 (0)	4 (29)	0 (0)	0 (0)	0 (0)	3 (21)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	erosion:glandular stomach		2 (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)
	mineralization:glandular stomach		2 (13)	0 (0)	0 (0)	0 (0)	3 (21)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	3 (14)	1 (5)	0 (0)	0 (0)
liver			<16>				<14>				<14>				<22>			
	necrosis: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)	1 (5)	0 (0)	0 (0)	0 (0)
	vacuolic change		1 (6)	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)
	fatty change:central		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)

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Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 16				200ppm 14				800ppm 14				3200ppm 22			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
liver			<16>				<14>				<14>				<22>			
	granulation		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	clear cell focus		0 (0)	0 (0)	0 (0)	0 (0)	2 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)
	acidophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	basophilic cell focus		0 (0)	0 (0)	0 (0)	0 (0)	2 (14)	0 (0)	0 (0)	0 (0)	2 (14)	0 (0)	0 (0)	0 (0)	2 (9)	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		1 (6)	0 (0)	0 (0)	0 (0)	2 (14)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	bile duct hyperplasia		11 (69)	2 (13)	0 (0)	0 (0)	10 (71)	2 (14)	0 (0)	0 (0)	10 (71)	3 (21)	0 (0)	0 (0)	14 (64)	3 (14)	0 (0)	0 (0)
pancreas			<16>				<14>				<14>				<22>			
	atrophy		4 (25)	0 (0)	0 (0)	0 (0)	0 (0)	1 (7)	0 (0)	0 (0)	3 (21)	0 (0)	0 (0)	0 (0)	4 (18)	0 (0)	0 (0)	0 (0)

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		No. of Animals on Study	16				14				14				22			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Urinary system]																		
kidney			<16>				<14>				<14>				<22>			
	deposit of hemosiderin		1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0
			(6)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(5)	(0)	(0)
	chronic nephropathy		0	6	7	3	0	2	7	4	2	3	6	3	1	10	7	2
			(0)	(38)	(44)	(19)	(0)	(14)	(50)	(29)	(14)	(21)	(43)	(21)	(5)	(45)	(32)	(9)
	hydronephrosis		0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
			(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)
	eosinophilic droplet:proximal tubule		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
[Endocrine system]																		
pituitary			<16>				<14>				<14>				<22>			
	cyst		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia		0	0	0	0	1	0	0	0	1	0	0	0	4	0	0	0
			(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(18)	(0)	(0)	(0)
	Rathke pouch		0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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		No. of Animals on Study	16				14				14				22			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Endocrine system]																		
thyroid			<16>				<14>				<14>				<22>			
	C-cell hyperplasia		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
parathyroid			<16>				<14>				<14>				<22>			
	hyperplasia		2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0
			(13)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
adrenal			<16>				<14>				<14>				<22>			
	hyperplasia:medulla		0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	focal fatty change:cortex		5	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0
			(31)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(5)	(5)	(0)	(0)
[Reproductive system]																		
testis			<16>				<14>				<14>				<22>			
	atrophy		12	0	0	0	13	0	0	0	13	0	0	0	20	0	0	0
			(75)	(0)	(0)	(0)	(93)	(0)	(0)	(0)	(93)	(0)	(0)	(0)	(91)	(0)	(0)	(0)
prostate			<16>				<14>				<14>				<22>			
	inflammation		6	1	0	0	3	0	0	0	2	3	1	0	3	3	0	0
			(38)	(6)	(0)	(0)	(21)	(0)	(0)	(0)	(14)	(21)	(7)	(0)	(14)	(14)	(0)	(0)

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Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	16				14				14				22			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Reproductive system]																		
prostate			<16>				<14>				<14>				<22>			
	hyperplasia		0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
mammary gl			<16>				<14>				<14>				<22>			
	hyperplasia		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	galactocele		6	0	0	0	3	0	0	0	3	0	0	0	3	0	0	0
			(38)	(0)	(0)	(0)	(21)	(0)	(0)	(0)	(21)	(0)	(0)	(0)	(14)	(0)	(0)	(0)
[Special sense organs/appandage]																		
eye			<16>				<14>				<14>				<22>			
	retinal atrophy		0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	keratitis		0	0	0	0	0	2	1	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(14)	(7)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Musculoskeletal system]																		
bone			<16>				<14>				<14>				<22>			
	ostitis fibrosa		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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b b : Number of animals with lesion
(c) c : b / a * 100
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01 Test of Chi Square

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	16				14				14				22			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Body cavities]																		
peritoneum			<16>				<14>				<14>				<22>			
	inflammation		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

APPENDIX J 2

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE : DEAD AND MORIBUND ANIMALS

(TOW-YERA STUDY)

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																		
nasal cavit			<12>				<12>				< 8>				<12>			
	thrombus		3	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0
			(25)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(25)	(0)	(0)	(0)	(17)	(0)	(0)	(0)
	eosinophilic change:olfactory epithelium		4	4	1	0	4	3	2	0	3	1	1	0	2	1	7	0
			(33)	(33)	(8)	(0)	(33)	(25)	(17)	(0)	(38)	(13)	(13)	(0)	(17)	(8)	(58)	(0)
	eosinophilic change:respiratory epithelium		0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(17)	(0)	(0)	(0)
	inflammation:foreign body		1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(17)	(0)	(0)	(0)
	inflammation:respiratory epithelium		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)
lung			<12>				<12>				< 8>				<12>			
	congestion		1	0	0	0	2	0	0	0	1	0	0	0	2	0	0	0
			(8)	(0)	(0)	(0)	(17)	(0)	(0)	(0)	(13)	(0)	(0)	(0)	(17)	(0)	(0)	(0)
	goblet cell hyperplasia		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Hematopoietic system]																		
bone marrow			<12>				<12>				< 8>				<12>			
	granulation		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]																		
bone marrow			<12>				<12>				< 8>				<12>			
	increased hematopoiesis		2	0	0	0	2	0	0	0	2	0	0	0	3	0	0	0
			(17)	(0)	(0)	(0)	(17)	(0)	(0)	(0)	(25)	(0)	(0)	(0)	(25)	(0)	(0)	(0)
lymph node			<12>				<12>				< 8>				<12>			
	lymphadenitis		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)
spleen			<12>				<12>				< 8>				<12>			
	deposit of hemosiderin		7	2	0	0	3	4	0	0	2	2	0	0	4	0	0	0
			(58)	(17)	(0)	(0)	(25)	(33)	(0)	(0)	(25)	(25)	(0)	(0)	(33)	(0)	(0)	(0)
	fibrosis		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	extramedullary hematopoiesis		2	3	3	2	4	1	2	0	2	2	0	1	2	0	2	2
			(17)	(25)	(25)	(17)	(33)	(8)	(17)	(0)	(25)	(25)	(0)	(13)	(17)	(0)	(17)	(17)
[Circulatory system]																		
heart			<12>				<12>				< 8>				<12>			
	thrombus		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Circulatory system]																		
heart			<12>				<12>				< 8>				<12>			
	mineralization		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)
	myocardial fibrosis		5	0	0	0	4	0	0	0	2	0	0	0	4	0	0	0
			(42)	(0)	(0)	(0)	(33)	(0)	(0)	(0)	(25)	(0)	(0)	(0)	(33)	(0)	(0)	(0)
[Digestive system]																		
tongue			<12>				<12>				< 8>				<12>			
	fibrosis		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(13)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
stomach			<12>				<12>				< 8>				<12>			
	atrophy		9	0	0	0	12	0	0	0	8	0	0	0	12	0	0	0
			(75)	(0)	(0)	(0)	(100)	(0)	(0)	(0)	(100)	(0)	(0)	(0)	(100)	(0)	(0)	(0)
	ulcer:forestomach		3	2	0	0	2	0	0	0	4	0	0	0	0	0	0	0 *
			(25)	(17)	(0)	(0)	(17)	(0)	(0)	(0)	(50)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:forestomach		5	0	0	0	1	0	0	0	5	0	0	0	1	0	0	0
			(42)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(63)	(0)	(0)	(0)	(8)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
stomach			<12>				<12>				< 8>				<12>			
	erosion:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)	0 (0)	0 (0)	1 (13)	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)	2 (17)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	mineralization:glandular stomach		0 (0)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (17)	0 (0)	0 (0)	0 (0)
liver			<12>				<12>				< 8>				<12>			
	herniation		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)
	necrosis:central		0 (0)	0 (0)	0 (0)	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)
	necrosis:focal		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 (8)	0 (0)	0 (0)	0 (0)
	vacuolic change		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	fatty change:central		2 (17)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Digestive system]																		
liver			<12>				<12>				< 8>				<12>			
	degeneration:central		3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(25)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(13)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	granulation		1	0	0	1	3	0	0	0	0	0	0	0	1	0	0	0
			(8)	(0)	(0)	(8)	(25)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)
	basophilic cell focus		0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	0
			(0)	(0)	(0)	(0)	(17)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(17)	(0)	(0)	(0)
	bile duct hyperplasia		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:regenerative		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
pancreas			<12>				<12>				< 8>				<12>			
	atrophy		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:acinar cell		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Urinary system]																		
kidney			<12>				<12>				< 8>				<12>			
	deposit of hemosiderin		3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(25)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Urinary system]																		
kidney			<12>				<12>				< 8>				<12>			
	chronic nephropathy		6	3	0	1	4	3	0	1	3	1	0	1	4	1	2	2
			(50)	(25)	(0)	(8)	(33)	(25)	(0)	(8)	(38)	(13)	(0)	(13)	(33)	(8)	(17)	(17)
	hydronephrosis		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	eosinophilic droplet:proximal tubule		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
urin bladd			<12>				<12>				< 8>				<12>			
	inflammatory polyp		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Endocrine system]																		
pituitary			<12>				<12>				< 8>				<12>			
	cyst		0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(17)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)
	hyperplasia		0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0
			(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(25)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Endocrine system]																		
pituitary			<12>				<12>				< 8>				<12>			
	Rathke pouch		2 (17)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
thyroid			<12>				<12>				< 8>				<12>			
	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 (8)	0 (0)	0 (0)	0 (0)
parathyroid			<12>				<12>				< 8>				<12>			
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (13)	0 (0)	0 (0)	0 (0)	1 (8)	0 (0)	0 (0)	0 (0)
adrenal			<12>				<12>				< 8>				<12>			
	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 (8)	0 (0)	0 (0)	0 (0)
	hyperplasia:medulla		2 (17)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (13)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	focal fatty change:cortex		3 (25)	1 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (25)	0 (0)	0 (0)	0 (0)	2 (17)	0 (0)	0 (0)	0 (0)
[Reproductive system]																		
uterus			<12>				<12>				< 8>				<12>			
	dilatation		0 (0)	0 (0)	0 (0)	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)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Reproductive system]																		
uterus			<12>				<12>				< 8>				<12>			
	hyperplasia:epithelium		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
mammary gl			<12>				<12>				< 8>				<12>			
	hyperplasia		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	galactocele		5	0	0	0	5	0	0	0	4	0	0	0	5	0	0	0
			(42)	(0)	(0)	(0)	(42)	(0)	(0)	(0)	(50)	(0)	(0)	(0)	(42)	(0)	(0)	(0)
[Special sense organs/appandage]																		
eye			<12>				<12>				< 8>				<12>			
	retinal atrophy		1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0
			(8)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(17)	(0)	(0)	(0)
	keratitis		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)
	phthisis bulbi		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	12				12				8				12			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Special sense organs/appandage]																		
eye			<12>				<12>				< 8>				<12>			
	mineralization:cornea		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Harder gl			<12>				<12>				< 8>				<12>			
	granulation		1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
			(8)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)
[Musculoskeletal system]																		
bone			<12>				<12>				< 8>				<12>			
	ostitis fibrosa		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)

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

APPENDIX J 3

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : MALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 34				200ppm 36				800ppm 36				3200ppm 28			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Integumentary system/appandage]																		
skin/app			<34>				<36>				<36>				<28>			
	hyperkeratosis		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)
	epidermal cyst		1 (3)	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)
[Respiratory system]																		
nasal cavit			<34>				<36>				<36>				<28>			
	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)
	eosinophilic change:olfactory epithelium		28 (82)	0 (0)	0 (0)	0 (0)	19 (53)	8 (22)	2 (6)	0 (0) **	21 (58)	5 (14)	2 (6)	0 (0) *	8 (29)	1 (4)	3 (11)	0 (0) **
	eosinophilic change:respiratory epithelium		1 (3)	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)
	inflammation:foreign body		6 (18)	0 (0)	0 (0)	0 (0)	10 (28)	1 (3)	0 (0)	0 (0)	12 (33)	2 (6)	0 (0)	0 (0)	4 (14)	3 (11)	0 (0)	0 (0)
	inflammation:respiratory epithelium		4 (12)	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)	0 (0)	0 (0)	5 (14)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	34				36				36				28			
		Grade	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Respiratory system]																		
larynx			<34>				<36>				<36>				<28>			
	inflammation:foreign body		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)
lung			<34>				<36>				<36>				<28>			
	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 (4)	0 (0)	0 (0)
	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 (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)	1 (4)	0 (0)	0 (0)	0 (0)
	accumulation of foamy cells		1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		1 (3)	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	4 (14)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow			<34>				<36>				<36>				<28>			
	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)	1 (4)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	34				36				36				28			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]																		
bone marrow			<34>				<36>				<36>				<28>			
	granulation		1	0	0	0	1	0	0	0	1	0	0	0	3	0	0	0
			(3)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(11)	(0)	(0)	(0)
	increased hematopoiesis		9	0	0	0	10	0	0	0	8	0	0	0	2	0	0	0
			(26)	(0)	(0)	(0)	(28)	(0)	(0)	(0)	(22)	(0)	(0)	(0)	(7)	(0)	(0)	(0)
	reticulosis		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
lymph node			<34>				<36>				<36>				<28>			
	lymphadenitis		3	0	0	0	6	0	0	0	3	0	0	0	1	0	0	0
			(9)	(0)	(0)	(0)	(17)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(4)	(0)	(0)	(0)
spleen			<34>				<36>				<36>				<28>			
	deposit of hemosiderin		29	0	0	0	35	0	0	0	32	2	0	0	24	0	1	0
			(85)	(0)	(0)	(0)	(97)	(0)	(0)	(0)	(89)	(6)	(0)	(0)	(86)	(0)	(4)	(0)
	fibrosis		3	1	0	0	2	1	0	0	3	0	0	0	2	0	0	0
			(9)	(3)	(0)	(0)	(6)	(3)	(0)	(0)	(8)	(0)	(0)	(0)	(7)	(0)	(0)	(0)
	extramedullary hematopoiesis		14	1	1	0	21	5	1	0	28	4	0	0 **	8	4	2	0
			(41)	(3)	(3)	(0)	(58)	(14)	(3)	(0)	(78)	(11)	(0)	(0)	(29)	(14)	(7)	(0)

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

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 34				200ppm 36				800ppm 36				3200ppm 28			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Hematopoietic system]																		
spleen			<34>				<36>				<36>				<28>			
	follicular hyperplasia		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)
[Circulatory system]																		
heart			<34>				<36>				<36>				<28>			
	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)
	fibrosis		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)
	myocardial fibrosis		26 (76)	1 (3)	0 (0)	0 (0)	30 (83)	1 (3)	0 (0)	0 (0)	24 (67)	0 (0)	0 (0)	0 (0)	19 (68)	1 (4)	0 (0)	0 (0)
[Digestive system]																		
oral cavity			<34>				<36>				<36>				<28>			
	squamous 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 (4)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	34				36				36				28			
		Grade	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
tooth			<34>				<36>				<36>				<28>			
	dysplasia		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)
stomach			<34>				<36>				<36>				<28>			
	atrophy		30 (88)	0 (0)	0 (0)	0 (0)	34 (94)	0 (0)	0 (0)	0 (0)	35 (97)	0 (0)	0 (0)	0 (0)	27 (96)	0 (0)	0 (0)	0 (0)
	ulcer:forestomach		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (6)	1 (3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	hyperplasia:forestomach		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)
	mineralization:glandular stomach		3 (9)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
liver			<34>				<36>				<36>				<28>			
	herniation		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)
	vacuolic change		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)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	34				36				36				28			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Digestive system]																		
liver			<34>				<36>				<36>				<28>			
	granulation		8	0	0	0	3	1	0	0	3	0	0	0	2	0	0	0
			(24)	(0)	(0)	(0)	(8)	(3)	(0)	(0)	(8)	(0)	(0)	(0)	(7)	(0)	(0)	(0)
	clear cell focus		2	0	0	0	2	0	0	0	3	0	0	0	3	0	0	0
			(6)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(11)	(0)	(0)	(0)
	acidophilic cell focus		4	0	0	0	8	0	0	0	8	0	0	0	2	0	0	0
			(12)	(0)	(0)	(0)	(22)	(0)	(0)	(0)	(22)	(0)	(0)	(0)	(7)	(0)	(0)	(0)
	basophilic cell focus		5	0	0	0	10	1	0	0	19	0	0	0 **	6	0	0	0
			(15)	(0)	(0)	(0)	(28)	(3)	(0)	(0)	(53)	(0)	(0)	(0)	(21)	(0)	(0)	(0)
	vacuolated cell focus		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	spongiosis hepatis		6	0	0	0	5	0	0	0	4	0	0	0	4	0	0	0
			(18)	(0)	(0)	(0)	(14)	(0)	(0)	(0)	(11)	(0)	(0)	(0)	(14)	(0)	(0)	(0)
	bile duct hyperplasia		22	11	0	0	23	10	0	0	31	4	0	0	26	1	0	0 *
			(65)	(32)	(0)	(0)	(64)	(28)	(0)	(0)	(86)	(11)	(0)	(0)	(93)	(4)	(0)	(0)
	biliary cyst		2	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0
			(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(11)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	34				36				36				28			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Digestive system]																		
pancreas			<34>				<36>				<36>				<28>			
	atrophy		5	0	0	0	3	0	0	0	8	0	1	0	5	1	0	0
			(15)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(22)	(0)	(3)	(0)	(18)	(4)	(0)	(0)
	hyperplasia:acinar cell		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Urinary system]																		
kidney			<34>				<36>				<36>				<28>			
	chronic nephropathy		0	4	20	9	0	7	23	4	2	7	20	7	0	4	16	8
			(0)	(12)	(59)	(26)	(0)	(19)	(64)	(11)	(6)	(19)	(56)	(19)	(0)	(14)	(57)	(29)
urin bladd			<34>				<36>				<36>				<28>			
	inflammatory polyp		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Endocrine system]																		
pituitary			<34>				<36>				<36>				<28>			
	hyperplasia		3	0	0	0	7	0	0	0	8	0	0	0	6	0	0	0
			(9)	(0)	(0)	(0)	(19)	(0)	(0)	(0)	(22)	(0)	(0)	(0)	(21)	(0)	(0)	(0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 34				200ppm 36				800ppm 36				3200ppm 28			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Endocrine system]																		
pituitary			<34>				<36>				<36>				<28>			
	Rathke pouch		1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
thyroid			<34>				<36>				<36>				<28>			
	ultimibranchial body remanet		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 (4)	0 (0)	0 (0)	0 (0)
	follicular hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)
	C-cell hyperplasia		3 (9)	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	3 (11)	1 (4)	0 (0)	0 (0)
	degeneration:follicular 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)
parathyroid			<34>				<36>				<36>				<28>			
	hyperplasia		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 (4)	0 (0)	0 (0)	0 (0)
adrenal			<34>				<36>				<36>				<28>			
	hyperplasia:cortical cell		1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)	7 (25)	0 (0)	0 (0)	0 * (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	34				36				36				28			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Endocrine system]																		
adrenal			<34>				<36>				<36>				<28>			
	hyperplasia:medulla		0	0	0	0	3	0	0	0	1	0	0	0	2	0	0	0
			(0)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(7)	(0)	(0)	(0)
	focal fatty change:cortex		3	0	0	0	3	0	0	0	7	0	0	0	2	0	0	0
			(9)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(19)	(0)	(0)	(0)	(7)	(0)	(0)	(0)
[Reproductive system]																		
testis			<34>				<36>				<36>				<28>			
	atrophy		32	0	0	0	34	0	0	0	36	0	0	0	28	0	0	0
			(94)	(0)	(0)	(0)	(94)	(0)	(0)	(0)	(100)	(0)	(0)	(0)	(100)	(0)	(0)	(0)
epididymis			<34>				<36>				<36>				<28>			
	necrosis		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
prostate			<34>				<36>				<36>				<28>			
	inflammation		11	2	0	0	12	3	0	0	9	2	0	0	10	2	0	0
			(32)	(6)	(0)	(0)	(33)	(8)	(0)	(0)	(25)	(6)	(0)	(0)	(36)	(7)	(0)	(0)
	hyperplasia		8	0	0	0	12	0	0	0	4	0	0	0	3	0	0	0
			(24)	(0)	(0)	(0)	(33)	(0)	(0)	(0)	(11)	(0)	(0)	(0)	(11)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	34				36				36				28			
		Grade	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Reproductive system]																		
mammary gl			<34>				<36>				<36>				<28>			
	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)
	galactocele		7 (21)	0 (0)	0 (0)	0 (0)	6 (17)	0 (0)	0 (0)	0 (0)	5 (14)	0 (0)	0 (0)	0 (0)	5 (18)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain			<34>				<36>				<36>				<28>			
	thrombus		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)
[Special sense organs/appandage]																		
eye			<34>				<36>				<36>				<28>			
	retinal atrophy		1 (3)	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
	keratitis		0 (0)	1 (3)	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)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 34				200ppm 36				800ppm 36				3200ppm 28			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Special sense organs/appandage]																		
eye			<34>				<36>				<36>				<28>			
	mineralization:cornea		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Harder gl			<34>				<36>				<36>				<28>			
	granulation		1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Musculoskeletal system]																		
bone			<34>				<36>				<36>				<28>			
	ostitis fibrosa		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	osteosclerosis		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(4)	(0)	(0)	(0)
[Body cavities]																		
adipose			<34>				<36>				<36>				<28>			
	granulation		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

APPENDIX J 4

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 38 1 (%)	Control 38 2 (%)	Control 38 3 (%)	Control 38 4 (%)	200ppm 38 1 (%)	200ppm 38 2 (%)	200ppm 38 3 (%)	200ppm 38 4 (%)	800ppm 42 1 (%)	800ppm 42 2 (%)	800ppm 42 3 (%)	800ppm 42 4 (%)	3200ppm 38 1 (%)	3200ppm 38 2 (%)	3200ppm 38 3 (%)	3200ppm 38 4 (%)
[Integumentary system/appandage]																		
skin/app			<38>				<38>				<42>				<38>			
	hyperkeratosis		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)
	epidermal cyst		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
[Respiratory system]																		
nasal cavit			<38>				<38>				<42>				<38>			
	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)
	osseous metaplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	eosinophilic change:olfactory epithelium		18 (47)	10 (26)	8 (21)	0 (0)	5 (13)	14 (37)	18 (47)	0 ** (0)	4 (10)	10 (24)	27 (64)	0 ** (0)	2 (5)	4 (11)	32 (84)	0 ** (0)
	eosinophilic change:respiratory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)	0 (0)	0 (0)
	inflammation:foreign body		2 (5)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	4 (10)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 38 1 (%)	2 (%)	3 (%)	4 (%)	200ppm 38 1 (%)	2 (%)	3 (%)	4 (%)	800ppm 42 1 (%)	2 (%)	3 (%)	4 (%)	3200ppm 38 1 (%)	2 (%)	3 (%)	4 (%)
[Respiratory system]																		
nasal cavit			<38>				<38>				<42>				<38>			
	inflammation:respiratory epithelium		6 (16)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)	6 (14)	0 (0)	0 (0)	0 (0)	5 (13)	0 (0)	0 (0)	0 (0)
larynx			<38>				<38>				<42>				<38>			
	inflammation:foreign body		0 (0)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)	3 (7)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
lung			<38>				<38>				<42>				<38>			
	accumulation of foamy cells		1 (3)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	bronchiolar-alveolar cell hyperplasia		2 (5)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)
[Hematopoietic system]																		
bone marrow			<38>				<38>				<42>				<38>			
	granulation		6 (16)	0 (0)	0 (0)	0 (0)	2 (5)	1 (3)	0 (0)	0 (0)	4 (10)	1 (2)	0 (0)	0 (0)	6 (16)	1 (3)	0 (0)	0 (0)
	increased hematopoiesis		2 (5)	0 (0)	0 (0)	0 (0)	5 (13)	0 (0)	0 (0)	0 (0)	4 (10)	1 (2)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	38				38				42				38			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
[Hematopoietic system]																		
bone marrow			<38>				<38>				<42>				<38>			
	reticulosis		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
lymph node			<38>				<38>				<42>				<38>			
	lymphadenitis		1	0	0	0	3	0	0	0	1	0	0	0	1	0	0	0
			(3)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
spleen			<38>				<38>				<42>				<38>			
	deposit of hemosiderin		28	9	0	0	29	9	0	0	30	8	0	0	22	14	0	0
			(74)	(24)	(0)	(0)	(76)	(24)	(0)	(0)	(71)	(19)	(0)	(0)	(58)	(37)	(0)	(0)
	fibrosis		2	0	0	0	0	0	0	0	1	0	0	0	4	1	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(11)	(3)	(0)	(0)
	extramedullary hematopoiesis		33	2	1	1	29	3	2	0	32	3	2	1	31	3	1	0
			(87)	(5)	(3)	(3)	(76)	(8)	(5)	(0)	(76)	(7)	(5)	(2)	(82)	(8)	(3)	(0)
	lymphoid hyperplasia		0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Circulatory system]																		
heart			<38>				<38>				<42>				<38>			
	myocardial fibrosis		13	0	0	0	18	0	0	0	18	0	0	0	15	0	0	0
			(34)	(0)	(0)	(0)	(47)	(0)	(0)	(0)	(43)	(0)	(0)	(0)	(39)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	38				38				42				38			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Digestive system]																		
stomach			<38>				<38>				<42>				<38>			
	atrophy		38	0	0	0	36	0	0	0	40	0	0	0	36	0	0	0
			(100)	(0)	(0)	(0)	(95)	(0)	(0)	(0)	(95)	(0)	(0)	(0)	(95)	(0)	(0)	(0)
	erosion:glandular stomach		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
liver			<38>				<38>				<42>				<38>			
	herniation		2	0	0	0	1	0	0	0	1	0	0	0	4	0	0	0
			(5)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(11)	(0)	(0)	(0)
	peliosis-like lesion		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	necrosis:central		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
	fatty change:central		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	granulation		10	4	1	0	10	4	0	0	13	4	2	0	22	0	0	0 *
			(26)	(11)	(3)	(0)	(26)	(11)	(0)	(0)	(31)	(10)	(5)	(0)	(58)	(0)	(0)	(0)
	clear cell focus		3	1	0	0	0	0	0	0	5	0	0	0	2	0	0	0
			(8)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(12)	(0)	(0)	(0)	(5)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	38				38				42				38			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
[Digestive system]																		
liver			<38>				<38>				<42>				<38>			
	acidophilic cell focus		0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
	basophilic cell focus		9	0	0	0	3	0	0	0	12	0	0	0	5	0	0	0
			(24)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(29)	(0)	(0)	(0)	(13)	(0)	(0)	(0)
	vacuolated cell focus		0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
	bile duct hyperplasia		4	0	0	0	3	0	0	0	1	0	0	0	2	0	0	0
			(11)	(0)	(0)	(0)	(8)	(0)	(0)	(0)	(2)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
pancreas			<38>				<38>				<42>				<38>			
	atrophy		3	0	0	0	1	0	0	0	4	0	0	0	3	0	0	0
			(8)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(10)	(0)	(0)	(0)	(8)	(0)	(0)	(0)
[Urinary system]																		
kidney			<38>				<38>				<42>				<38>			
	chronic nephropathy		16	12	9	1	10	16	5	5	10	10	17	4	9	13	13	1
			(42)	(32)	(24)	(3)	(26)	(42)	(13)	(13)	(24)	(24)	(40)	(10)	(24)	(34)	(34)	(3)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 38				200ppm 38				800ppm 42				3200ppm 38			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Urinary system]																		
kidney			<38>				<38>				<42>				<38>			
	hydronephrosis		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)
	mineralization:cortico-medullary junction		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)
[Endocrine system]																		
pituitary			<38>				<38>				<42>				<38>			
	cyst		0 (0)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)	7 (17)	0 (0)	0 (0)	0 * (0)	5 (13)	0 (0)	0 (0)	0 (0)
	hyperplasia		10 (26)	0 (0)	0 (0)	0 (0)	10 (26)	0 (0)	0 (0)	0 (0)	14 (33)	0 (0)	0 (0)	0 (0)	8 (21)	0 (0)	0 (0)	0 (0)
	Rathke pouch		2 (5)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	7 (18)	0 (0)	0 (0)	0 (0)
thyroid			<38>				<38>				<42>				<38>			
	follicular hyperplasia		1 (3)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 38 1 (%)	Control 38 2 (%)	Control 38 3 (%)	Control 38 4 (%)	200ppm 38 1 (%)	200ppm 38 2 (%)	200ppm 38 3 (%)	200ppm 38 4 (%)	800ppm 42 1 (%)	800ppm 42 2 (%)	800ppm 42 3 (%)	800ppm 42 4 (%)	3200ppm 38 1 (%)	3200ppm 38 2 (%)	3200ppm 38 3 (%)	3200ppm 38 4 (%)
[Endocrine system]																		
thyroid			<38>				<38>				<42>				<38>			
	C-cell hyperplasia		3 (8)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	8 (19)	0 (0)	0 (0)	0 (0)	5 (13)	0 (0)	0 (0)	0 (0)
parathyroid			<38>				<38>				<42>				<38>			
	hyperplasia		0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
adrenal			<38>				<38>				<42>				<38>			
	peliosis-like lesion		0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	necrosis:focal		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)	0 (0)	0 (0)	0 (0)	6 (16)	0 (0)	0 (0)	0 (0)	4 (10)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)
	hyperplasia:medulla		2 (5)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	focal fatty change:cortex		6 (16)	0 (0)	0 (0)	0 (0)	5 (13)	0 (0)	0 (0)	0 (0)	4 (10)	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	38				38				42				38			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
[Reproductive system]																		
ovary			<38>				<38>				<42>				<38>			
	cyst		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
uterus			<38>				<38>				<42>				<38>			
	dilatation		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:epithelium		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:gland		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
mammary gl			<38>				<38>				<42>				<38>			
	hyperplasia		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	galactocele		19	0	0	0	18	0	0	0	21	0	0	0	8	0	0	0 *
			(50)	(0)	(0)	(0)	(47)	(0)	(0)	(0)	(50)	(0)	(0)	(0)	(21)	(0)	(0)	(0)
[Special sense organs/appandage]																		
eye			<38>				<38>				<42>				<38>			
	retinal atrophy		6	0	0	0	7	0	0	0	4	0	0	0	2	0	0	0
			(16)	(0)	(0)	(0)	(18)	(0)	(0)	(0)	(10)	(0)	(0)	(0)	(5)	(0)	(0)	(0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 38				200ppm 38				800ppm 42				3200ppm 38			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Special sense organs/appandage]																		
eye			<38>				<38>				<42>				<38>			
	keratitis		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)
Harder gl			<38>				<38>				<42>				<38>			
	granulation		3 (8)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	3 (7)	0 (0)	0 (0)	0 (0)	5 (13)	0 (0)	0 (0)	0 (0)
[Musculoskeletal system]																		
bone			<38>				<38>				<42>				<38>			
	osteosclerosis		2 (5)	0 (0)	0 (0)	0 (0)	4 (11)	0 (0)	0 (0)	0 (0)	2 (5)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)

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

APPENDIX J 5

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : DEAD AND MORIBUND ANIMALS

MOSUE (TOW-YERA STUDY)

STUDY NO. : 0190
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 10				200ppm 16				800ppm 16				3200ppm 19			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Integumentary system/appandage]																		
skin/app			<10>				<16>				<16>				<19>			
	inflammation		1 (10)	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)
	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			<10>				<16>				<16>				<19>			
	eosinophilic change:olfactory epithelium		3 (30)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	2 (13)	1 (6)	0 (0)	0 (0)	2 (11)	0 (0)	0 (0)	0 (0)
	eosinophilic change:respiratory epithelium		0 (0)	0 (0)	0 (0)	0 (0)	3 (19)	0 (0)	0 (0)	0 (0)	3 (19)	1 (6)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	respiratory metaplasia:olfactory epithelium		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)
lung			<10>				<16>				<16>				<19>			
	hemorrhage		1 (10)	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)	1 (5)	0 (0)

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

STUDY NO. : 0190
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				200ppm				800ppm				3200ppm			
		No. of Animals on Study	10				16				16				19			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																		
lung			<10>				<16>				<16>				<19>			
	bronchiolar-alveolar cell hyperplasia		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Hematopoietic system]																		
lymph node			<10>				<16>				<16>				<19>			
	lymphadenitis		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
spleen			<10>				<16>				<16>				<19>			
	extramedullary hematopoiesis		1	0	2	0	2	4	1	0	1	2	4	0	4	3	1	0
			(10)	(0)	(20)	(0)	(13)	(25)	(6)	(0)	(6)	(13)	(25)	(0)	(21)	(16)	(5)	(0)
	follicular hyperplasia		0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Circulatory system]																		
heart			<10>				<16>				<16>				<19>			
	thrombus		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	10				16				16				19			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Circulatory system]																		
heart			<10>				<16>				<16>				<19>			
	mineralization		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(20)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	myocardial fibrosis		0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
artery/aort			<10>				<16>				<16>				<19>			
	arteritis		0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(13)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Digestive system]																		
stomach			<10>				<16>				<16>				<19>			
	erosion:forestomach		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	ulcer:forestomach		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:forestomach		1	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0
			(10)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(16)	(0)	(0)	(0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 10				200ppm 16				800ppm 16				3200ppm 19			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
stomach		<a>	<10>				<16>				<16>				<19>			
	erosion:glandular stomach		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		(c)	(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:glandular stomach		5	0	0	0	4	0	0	0	10	0	0	0	8	0	0	0
		(c)	(50)	(0)	(0)	(0)	(25)	(0)	(0)	(0)	(63)	(0)	(0)	(0)	(42)	(0)	(0)	(0)
liver		<a>	<10>				<16>				<16>				<19>			
	angiectasis		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
		(c)	(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	fatty change:central		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
		(c)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	granulation		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
		(c)	(0)	(0)	(0)	(0)	(6)	(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	1	0	0	0
		(c)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
[Urinary system]																		
kidney		<a>	<10>				<16>				<16>				<19>			
	tubuler dilatation		2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
		(c)	(20)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	10				16				16				19			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Urinary system]																		
kidney			<10>				<16>				<16>				<19>			
	hyaline droplet		1	0	0	0	2	0	0	0	3	0	0	0	2	0	0	0
			(10)	(0)	(0)	(0)	(13)	(0)	(0)	(0)	(19)	(0)	(0)	(0)	(11)	(0)	(0)	(0)
	inflammatory polyp		0	0	0	0	2	0	0	1	2	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(13)	(0)	(0)	(6)	(13)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	vacuolization of proximal tubule		6	1	0	0	8	0	0	0	7	0	0	0	7	0	0	0
			(60)	(10)	(0)	(0)	(50)	(0)	(0)	(0)	(44)	(0)	(0)	(0)	(37)	(0)	(0)	(0)
	hydronephrosis		0	0	1	0	3	0	2	1	1	0	0	0	0	0	0	0
			(0)	(0)	(10)	(0)	(19)	(0)	(13)	(6)	(6)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	mineralization:pelvis		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	mineralization:cortex		0	0	0	0	1	0	0	0	1	0	0	0	2	0	0	0
			(0)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(6)	(0)	(0)	(0)	(11)	(0)	(0)	(0)
	glomerulosclerosis		0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	regeneration proximal tubule		3	2	0	0	4	0	0	0	2	0	0	0	2	0	0	0 *
			(30)	(20)	(0)	(0)	(25)	(0)	(0)	(0)	(13)	(0)	(0)	(0)	(11)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	10				16				16				19			
		Grade	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Endocrine system]																		
pituitary			<10>				<16>				<16>				<19>			
	Rathke pouch		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)
[Reproductive system]																		
testis			<10>				<16>				<16>				<19>			
	atrophy		2 (20)	0 (0)	0 (0)	0 (0)	2 (13)	0 (0)	0 (0)	0 (0)	4 (25)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
epididymis			<10>				<16>				<16>				<19>			
	spermatogenic granuloma		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			<10>				<16>				<16>				<19>			
	inflammation		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 (5)	0 (0)	0 (0)	0 (0)
prep/cli gl			<10>				<16>				<16>				<19>			
	cyst		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 (5)	0 (0)	0 (0)	0 (0)
[Nervous system]																		
brain			<10>				<16>				<16>				<19>			
	mineralization		1 (10)	0 (0)	0 (0)	0 (0)	8 (50)	0 (0)	0 (0)	0 (0)	5 (31)	0 (0)	0 (0)	0 (0)	9 (47)	0 (0)	0 (0)	0 (0)

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

APPENDIX J 6

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : FEMALE : DEAD AND MORIBUND ANIMALS

(TOW-YERA STUDY)

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	21				20				21				20			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																		
nasal cavit			<21>				<20>				<21>				<20>			
	eosinophilic change:olfactory epithelium		2	1	0	0	4	0	1	0	2	2	0	0	1	0	0	0
			(10)	(5)	(0)	(0)	(20)	(0)	(5)	(0)	(10)	(10)	(0)	(0)	(5)	(0)	(0)	(0)
	eosinophilic change:respiratory epithelium		9	0	0	0	9	0	1	0	2	2	0	0 *	9	0	0	0
			(43)	(0)	(0)	(0)	(45)	(0)	(5)	(0)	(10)	(10)	(0)	(0)	(45)	(0)	(0)	(0)
	respiratory metaplasia:olfactory epithelium		1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)
lung			<21>				<20>				<21>				<20>			
	hemorrhage		1	0	1	0	0	0	0	0	2	1	1	0	3	0	0	0
			(5)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(10)	(5)	(5)	(0)	(15)	(0)	(0)	(0)
	lymphocytic infiltration		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Hematopoietic system]																		
spleen			<21>				<20>				<21>				<20>			
	deposit of melanin		6	0	0	0	2	0	0	0	4	0	0	0	1	0	0	0
			(29)	(0)	(0)	(0)	(10)	(0)	(0)	(0)	(19)	(0)	(0)	(0)	(5)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	21				20				21				20			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]																		
spleen			<21>				<20>				<21>				<20>			
	extramedullary hematopoiesis		0	2	2	2	1	1	6	3	0	3	4	2	1	2	8	5 *
			(0)	(10)	(10)	(10)	(5)	(5)	(30)	(15)	(0)	(14)	(19)	(10)	(5)	(10)	(40)	(25)
	follicular hyperplasia		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
[Circulatory system]																		
heart			<21>				<20>				<21>				<20>			
	myocardial fibrosis		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
artery/aort			<21>				<20>				<21>				<20>			
	arteritis		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Digestive system]																		
salivary gl			<21>				<20>				<21>				<20>			
	lymphocytic infiltration		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	21				20				21				20			
		Grade	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
stomach			<21>				<20>				<21>				<20>			
	hyperplasia:forestomach		2 (10)	0 (0)	0 (0)	0 (0)	4 (20)	0 (0)	0 (0)	0 (0)	8 (38)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)
	hyperplasia:glandular stomach		10 (48)	0 (0)	0 (0)	0 (0)	12 (60)	0 (0)	0 (0)	0 (0)	18 (86)	0 (0)	0 (0)	0 * (0)	10 (50)	0 (0)	0 (0)	0 (0)
liver			<21>				<20>				<21>				<20>			
	angiectasis		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)	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)
	granulation		1 (5)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)	0 (0)	2 (10)	0 (0)	0 (0)	0 (0)	0 (0)	1 (5)	0 (0)	0 (0)
	basophilic cell focus		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)
[Urinary system]																		
kidney			<21>				<20>				<21>				<20>			
	tubuler 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)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	21				20				21				20			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Urinary system]																		
kidney			<21>				<20>				<21>				<20>			
	hyaline droplet		4	0	0	0	7	0	0	0	5	0	0	0	10	0	0	0
			(19)	(0)	(0)	(0)	(35)	(0)	(0)	(0)	(24)	(0)	(0)	(0)	(50)	(0)	(0)	(0)
	hyaline cast		0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	lymphocytic infiltration		0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	inflammatory polyp		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hydronephrosis		0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	0
			(0)	(0)	(5)	(0)	(5)	(0)	(0)	(5)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)
	mineralization:cortex		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	glomerulosclerosis		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	regeneration proximal tubule		1	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0
			(5)	(0)	(5)	(0)	(0)	(5)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 21				200ppm 20				800ppm 21				3200ppm 20			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Endocrine system]																		
pituitary		<21>	1	0	0	0	<19> 3	0	0	0	<21> 2	0	0	0	<20> 1	0	0	0
	hyperplasia		(5)	(0)	(0)	(0)	(16)	(0)	(0)	(0)	(10)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
	Rathke pouch		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(5)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
adrenal		<21>	1	0	0	0	<19> 0	0	0	0	<21> 0	0	0	0	<20> 0	0	0	0
	hyperplasia:cortical cell		(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	fatty change:corticomedullary junction		0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(5)	(0)	(0)	(0)
[Reproductive system]																		
ovary		<21>	2	0	0	0	<19> 3	0	0	0	<21> 1	0	0	0	<20> 2	0	0	0
	cyst		(10)	(0)	(0)	(0)	(16)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(10)	(0)	(0)	(0)
[Nervous system]																		
brain		<21>	7	0	0	0	<20> 3	0	0	0	<21> 6	0	0	0	<20> 4	0	0	0
	mineralization		(33)	(0)	(0)	(0)	(15)	(0)	(0)	(0)	(29)	(0)	(0)	(0)	(20)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	21				20				21				20			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Special sense organs/appandage]																		
eye			<21>				<20>				<21>				<20>			
	mineralization:cornea		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Musculoskeletal system]																		
muscle			<21>				<20>				<21>				<20>			
	mineralization		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

APPENDIX J 7

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : MALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0190
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	40				34				34				31			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Integumentary system/appandage]																		
skin/app			<40>				<34>				<34>				<31>			
	inflammation		0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	epidermal cyst		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
[Respiratory system]																		
nasal cavit			<40>				<34>				<34>				<31>			
	eosinophilic change:olfactory epithelium		7	2	0	0	8	0	0	0	11	1	0	0	4	0	0	0
			(18)	(5)	(0)	(0)	(24)	(0)	(0)	(0)	(32)	(3)	(0)	(0)	(13)	(0)	(0)	(0)
	eosinophilic change:respiratory epithelium		7	1	0	0	4	0	0	0	8	0	0	0	5	0	0	0
			(18)	(3)	(0)	(0)	(12)	(0)	(0)	(0)	(24)	(0)	(0)	(0)	(16)	(0)	(0)	(0)
	respiratory metaplasia:olfactory epithelium		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
lung			<39>				<34>				<34>				<31>			
	granulation		1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 40				200ppm 34				800ppm 34				3200ppm 31			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Respiratory system]																		
lung			<39>				<34>				<34>				<31>			
	bronchiolar-alveolar cell hyperplasia		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)
[Hematopoietic system]																		
bone marrow			<40>				<34>				<34>				<31>			
	accumulation of histiocyte		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)
lymph node			<40>				<34>				<34>				<31>			
	lymphadenitis		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)
spleen			<40>				<34>				<34>				<31>			
	deposit of melanin		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)
	extramedullary hematopoiesis		2 (5)	2 (5)	3 (8)	0 (0)	2 (6)	1 (3)	0 (0)	0 (0)	2 (6)	1 (3)	0 (0)	1 (3)	2 (6)	2 (6)	0 (0)	0 (0)
	follicular hyperplasia		1 (3)	0 (0)	0 (0)	0 (0)	5 (15)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	40				34				34				31			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Circulatory system]																		
heart			<40>				<34>				<34>				<31>			
	myocardial fibrosis		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Digestive system]																		
tooth			<40>				<34>				<34>				<31>			
	dysplasia		2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(5)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
stomach			<40>				<34>				<34>				<31>			
	ulcer:forestomach		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:forestomach		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	erosion:glandular stomach		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	hyperplasia:glandular stomach		36	0	0	0	30	0	0	0	31	0	0	0	23	0	0	0
			(90)	(0)	(0)	(0)	(88)	(0)	(0)	(0)	(91)	(0)	(0)	(0)	(74)	(0)	(0)	(0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 40				200ppm 34				800ppm 34				3200ppm 31			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
large intes			<40>				<34>				<34>				<31>			
	lymphangiectasia		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)	0 (0)
liver			<40>				<34>				<34>				<31>			
	herniation		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)
	angiectasis		2 (5)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	0 (0)
	lymphocytic infiltration		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		25 (63)	0 (0)	0 (0)	0 (0)	17 (50)	0 (0)	0 (0)	0 (0)	20 (59)	1 (3)	0 (0)	0 (0)	12 (39)	0 (0)	0 (0)	0 (0)
	clear cell focus		4 (10)	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)
	basophilic cell focus		2 (5)	1 (3)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	4 (13)	0 (0)	0 (0)	0 (0)
	biliary 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)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 40				200ppm 34				800ppm 34				3200ppm 31			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Urinary system]																		
kidney			<40>				<34>				<34>				<31>			
	hyaline droplet		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 cast		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)
	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)
	lymphocytic infiltration		1 (3)	0 (0)	0 (0)	0 (0)	6 (18)	0 (0)	0 (0)	0 (0)	5 (15)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	cell infiltration		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)
	inflammatory polyp		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)
	vacuolization of proximal tubule		39 (98)	0 (0)	0 (0)	0 (0)	33 (97)	0 (0)	0 (0)	0 (0)	34 (100)	0 (0)	0 (0)	0 (0)	29 (94)	0 (0)	0 (0)	0 (0)
	hydronephrosis		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)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 40				200ppm 34				800ppm 34				3200ppm 31			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Urinary system]																		
kidney			<40>				<34>				<34>				<31>			
	mineralization:pelvis		5 (13)	0 (0)	0 (0)	0 (0)	4 (12)	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	mineralization:cortex		5 (13)	0 (0)	0 (0)	0 (0)	6 (18)	0 (0)	0 (0)	0 (0)	12 (35)	0 (0)	0 (0)	0 * (0)	7 (23)	0 (0)	0 (0)	0 (0)
	regeneration proximal tubule		31 (78)	1 (3)	0 (0)	0 (0)	25 (74)	0 (0)	0 (0)	0 (0)	27 (79)	1 (3)	0 (0)	0 (0)	19 (61)	0 (0)	0 (0)	0 (0)
	tubular cell hyperplasia:cystic		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)
[Endocrine system]																		
pituitary			<40>				<34>				<34>				<31>			
	hyperplasia		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)
	Rathke pouch		4 (10)	0 (0)	0 (0)	0 (0)	3 (9)	0 (0)	0 (0)	0 (0)	5 (15)	0 (0)	0 (0)	0 (0)	6 (19)	0 (0)	0 (0)	0 (0)
adrenal			<40>				<34>				<34>				<31>			
	spindle-cell 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)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 40				200ppm 34				800ppm 34				3200ppm 31			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Endocrine system]																		
adrenal			<40>				<34>				<34>				<31>			
	hyperplasia:cortical cell		6	0	0	0	7	0	0	0	5	0	0	0	6	0	0	0
			(15)	(0)	(0)	(0)	(21)	(0)	(0)	(0)	(15)	(0)	(0)	(0)	(19)	(0)	(0)	(0)
[Reproductive system]																		
testis			<40>				<34>				<34>				<31>			
	atrophy		3	0	0	0	5	0	0	0	3	0	0	0	5	0	0	0
			(8)	(0)	(0)	(0)	(15)	(0)	(0)	(0)	(9)	(0)	(0)	(0)	(16)	(0)	(0)	(0)
epididymis			<40>				<34>				<34>				<31>			
	spermatogenic granuloma		3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
			(8)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(10)	(0)	(0)	(0)
semin ves			<40>				<34>				<34>				<31>			
	inflammation		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
prep/cli gl			<40>				<34>				<34>				<31>			
	cyst		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
[Nervous system]																		
brain			<40>				<34>				<34>				<31>			
	mineralization		20	0	0	0	22	0	0	0	13	0	0	0	11	0	0	0
			(50)	(0)	(0)	(0)	(65)	(0)	(0)	(0)	(38)	(0)	(0)	(0)	(35)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	40				34				34				31			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Nervous system]																		
brain			<40>				<34>				<34>				<31>			
	hydrocephalus		1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Special sense organs/appandage]																		
eye			<40>				<34>				<34>				<31>			
	mineralization:cornea		2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(5)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

APPENDIX J 8

HISTOLOGICAL FINDINGS : NON-NEOPLASTIC LESIONS : SUMMARY

MOSUE : FEMALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	29				28				29				29			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Respiratory system]																		
nasal cavit			<29>				<28>				<29>				<29>			
	eosinophilic change:olfactory epithelium		6	0	0	0	9	0	0	0	3	3	0	0	6	1	1	0
			(21)	(0)	(0)	(0)	(32)	(0)	(0)	(0)	(10)	(10)	(0)	(0)	(21)	(3)	(3)	(0)
	eosinophilic change:respiratory epithelium		20	2	0	0	18	0	0	0	21	4	0	0	16	1	1	0
			(69)	(7)	(0)	(0)	(64)	(0)	(0)	(0)	(72)	(14)	(0)	(0)	(55)	(3)	(3)	(0)
	respiratory metaplasia:olfactory epithelium		0	0	0	0	0	0	1	0	0	0	0	0	1	2	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(4)	(0)	(0)	(0)	(0)	(0)	(3)	(7)	(0)	(0)
lung			<29>				<28>				<29>				<29>			
	lymphocytic infiltration		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(4)	(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	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
[Hematopoietic system]																		
lymph node			<29>				<28>				<29>				<29>			
	lymphadenitis		3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(10)	(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	29				28				29				29			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Hematopoietic system]																		
spleen			<29>				<28>				<29>				<29>			
	deposit of melanin		9	0	0	0	11	0	0	0	14	0	0	0	9	0	0	0
			(31)	(0)	(0)	(0)	(39)	(0)	(0)	(0)	(48)	(0)	(0)	(0)	(31)	(0)	(0)	(0)
	extramedullary hematopoiesis		2	2	0	1	0	1	1	1	1	0	0	0	2	1	1	0
			(7)	(7)	(0)	(3)	(0)	(4)	(4)	(4)	(3)	(0)	(0)	(0)	(7)	(3)	(3)	(0)
	follicular hyperplasia		7	0	0	0	3	0	0	0	1	0	0	0	3	0	0	0
			(24)	(0)	(0)	(0)	(11)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(10)	(0)	(0)	(0)
[Digestive system]																		
tongue			<29>				<28>				<29>				<29>			
	arteritis		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
salivary gl			<29>				<28>				<29>				<29>			
	lymphocytic infiltration		1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(10)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
stomach			<29>				<28>				<29>				<29>			
	erosion:forestomach		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	29				28				29				29			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Digestive system]																		
stomach			<29>				<28>				<29>				<29>			
	hyperplasia:forestomach		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(4)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	erosion:glandular stomach		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
	hyperplasia:glandular stomach		23	0	0	0	24	0	0	0	28	0	0	0	22	0	0	0
			(79)	(0)	(0)	(0)	(86)	(0)	(0)	(0)	(97)	(0)	(0)	(0)	(76)	(0)	(0)	(0)
liver			<29>				<28>				<29>				<29>			
	angiectasis		3	1	0	0	1	0	0	0	1	0	0	0	2	0	0	0
			(10)	(3)	(0)	(0)	(4)	(0)	(0)	(0)	(3)	(0)	(0)	(0)	(7)	(0)	(0)	(0)
	lymphocytic infiltration		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
	granulation		21	0	0	0	17	0	0	0	20	0	0	0	13	2	0	0
			(72)	(0)	(0)	(0)	(61)	(0)	(0)	(0)	(69)	(0)	(0)	(0)	(45)	(7)	(0)	(0)
	clear cell focus		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			(3)	(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	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)

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

Organ	Findings	Group Name / No. of Animals on Study / Grade	Control 29				200ppm 28				800ppm 29				3200ppm 29			
			1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)	1 (%)	2 (%)	3 (%)	4 (%)
[Digestive system]																		
liver			<29>				<28>				<29>				<29>			
	biliary cyst		2 (7)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
[Urinary system]																		
kidney			<29>				<28>				<29>				<29>			
	hyaline droplet		2 (7)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)	0 (0)
	hyaline cast		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)
	lymphocytic infiltration		2 (7)	0 (0)	0 (0)	0 (0)	3 (11)	0 (0)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	0 (0)	5 (17)	0 (0)	0 (0)	0 (0)
	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)	1 (3)	0 (0)	0 (0)	0 (0)
	hydronephrosis		2 (7)	0 (0)	0 (0)	0 (0)	0 (0)	1 (4)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)
	regeneration proximal tubule		0 (0)	0 (0)	0 (0)	0 (0)	2 (7)	0 (0)	0 (0)	0 (0)	3 (10)	0 (0)	0 (0)	0 (0)	0 (0)	1 (3)	0 (0)	0 (0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	29				28				29				29			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Endocrine system]																		
pituitary			<29>				<28>				<28>				<29>			
	hyperplasia		8	0	0	0	7	0	0	0	9	0	0	0	10	0	0	0
			(28)	(0)	(0)	(0)	(25)	(0)	(0)	(0)	(32)	(0)	(0)	(0)	(34)	(0)	(0)	(0)
	Rathke pouch		0	0	0	0	1	0	0	0	3	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(4)	(0)	(0)	(0)	(11)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
adrenal			<29>				<28>				<29>				<29>			
	fatty change:corticomedullary junction		2	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0
			(7)	(0)	(0)	(0)	(7)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
[Reproductive system]																		
ovary			<29>				<28>				<29>				<29>			
	thrombus		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
	cyst		10	1	0	0	8	0	0	0	7	0	0	0	7	0	0	0
			(34)	(3)	(0)	(0)	(29)	(0)	(0)	(0)	(24)	(0)	(0)	(0)	(24)	(0)	(0)	(0)
uterus			<29>				<28>				<29>				<29>			
	dilatation		1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(3)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)

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

Organ	Findings	Group Name	Control				200ppm				800ppm				3200ppm			
		No. of Animals on Study	29				28				29				29			
		Grade	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
			(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
[Reproductive system]																		
uterus			<29>				<28>				<29>				<29>			
	thrombus		0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
			(0)	(0)	(0)	(0)	(4)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
[Nervous system]																		
brain			<29>				<28>				<29>				<29>			
	mineralization		10	0	0	0	10	0	0	0	7	0	0	0	7	0	0	0
			(34)	(0)	(0)	(0)	(36)	(0)	(0)	(0)	(24)	(0)	(0)	(0)	(24)	(0)	(0)	(0)
[Special sense organs/appandage]																		
eye			<29>				<28>				<29>				<29>			
	phthisis bulbi		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
	mineralization:cornea		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)
Harder gl			<29>				<28>				<29>				<29>			
	lymphocytic infiltration		0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
			(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(3)	(0)	(0)	(0)

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

APPENDIX K 1

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

RAT : MALE

STUDY NO. : 0189
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	200ppm	800ppm	3200ppm
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		1	1	0	3
	NO. OF ANIMALS WITH TUMORS		1	1	0	3
	NO. OF ANIMALS WITH SINGLE TUMORS		0	0	0	1
	NO. OF ANIMALS WITH MULTIPLE TUMORS		1	1	0	2
	NO. OF BENIGN TUMORS		1	2	0	3
	NO. OF MALIGNANT TUMORS		1	1	0	2
	NO. OF TOTAL TUMORS		2	3	0	5
79 - 104	NO. OF EXAMINED ANIMALS		15	13	14	19
	NO. OF ANIMALS WITH TUMORS		15	13	14	19
	NO. OF ANIMALS WITH SINGLE TUMORS		2	2	2	3
	NO. OF ANIMALS WITH MULTIPLE TUMORS		13	11	12	16
	NO. OF BENIGN TUMORS		31	26	23	25
	NO. OF MALIGNANT TUMORS		8	9	9	16
	NO. OF TOTAL TUMORS		39	35	32	41
105 - 105	NO. OF EXAMINED ANIMALS		26	30	29	24
	NO. OF ANIMALS WITH TUMORS		26	30	29	24
	NO. OF ANIMALS WITH SINGLE TUMORS		8	7	3	5
	NO. OF ANIMALS WITH MULTIPLE TUMORS		18	23	26	19
	NO. OF BENIGN TUMORS		46	51	64	45
	NO. OF MALIGNANT TUMORS		6	10	5	11
	NO. OF TOTAL TUMORS		52	61	69	56

STUDY NO. : 0189
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	200ppm	800ppm	3200ppm
0 - 105	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
0 - 105	NO. OF EXAMINED ANIMALS		50	50	50	50
	NO. OF ANIMALS WITH TUMORS		42	44	43	46
	NO. OF ANIMALS WITH SINGLE TUMORS		10	9	5	9
	NO. OF ANIMALS WITH MULTIPLE TUMORS		32	35	38	37
	NO. OF BENIGN TUMORS		78	79	87	73
	NO. OF MALIGNANT TUMORS		15	20	14	29
	NO. OF TOTAL TUMORS		93	99	101	102

APPENDIX K 2

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

RAT : FEMALE

STUDY NO. : 0189
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	200ppm	800ppm	3200ppm
0 - 52	NO. OF EXAMINED ANIMALS		0	2	1	0
	NO. OF ANIMALS WITH TUMORS		0	2	1	0
	NO. OF ANIMALS WITH SINGLE TUMORS		0	1	1	0
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	1	0	0
	NO. OF BENIGN TUMORS		0	1	0	0
	NO. OF MALIGNANT TUMORS		0	2	1	0
	NO. OF TOTAL TUMORS		0	3	1	0
53 - 78	NO. OF EXAMINED ANIMALS		1	2	1	1
	NO. OF ANIMALS WITH TUMORS		1	2	1	1
	NO. OF ANIMALS WITH SINGLE TUMORS		1	2	1	1
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	0	0
	NO. OF BENIGN TUMORS		0	2	0	0
	NO. OF MALIGNANT TUMORS		1	0	1	1
	NO. OF TOTAL TUMORS		1	2	1	1
79 - 104	NO. OF EXAMINED ANIMALS		11	8	6	11
	NO. OF ANIMALS WITH TUMORS		10	7	6	11
	NO. OF ANIMALS WITH SINGLE TUMORS		2	4	2	3
	NO. OF ANIMALS WITH MULTIPLE TUMORS		8	3	4	8
	NO. OF BENIGN TUMORS		12	6	8	12
	NO. OF MALIGNANT TUMORS		9	4	3	11
	NO. OF TOTAL TUMORS		21	10	11	23
105 - 105	NO. OF EXAMINED ANIMALS		29	32	33	31
	NO. OF ANIMALS WITH TUMORS		18	18	23	22
	NO. OF ANIMALS WITH SINGLE TUMORS		11	9	15	13
	NO. OF ANIMALS WITH MULTIPLE TUMORS		7	9	8	9
	NO. OF BENIGN TUMORS		23	26	24	28
	NO. OF MALIGNANT TUMORS		7	4	8	4
	NO. OF TOTAL TUMORS		30	30	32	32

STUDY NO. : 0189
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	200ppm	800ppm	3200ppm
0 - 105	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
0 - 105	NO. OF EXAMINED ANIMALS		50	50	50	50
	NO. OF ANIMALS WITH TUMORS		29	29	31	34
	NO. OF ANIMALS WITH SINGLE TUMORS		14	16	19	17
	NO. OF ANIMALS WITH MULTIPLE TUMORS		15	13	12	17
	NO. OF BENIGN TUMORS		35	35	32	40
	NO. OF MALIGNANT TUMORS		17	10	13	16
	NO. OF TOTAL TUMORS		52	45	45	56

APPENDIX K 3

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

MOUSE : MALE

STUDY NO. : 0190
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	200ppm	800ppm	3200ppm
0 - 52	NO. OF EXAMINED ANIMALS		0	4	0	0
	NO. OF ANIMALS WITH TUMORS		0	1	0	0
	NO. OF ANIMALS WITH SINGLE TUMORS		0	1	0	0
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	0	0
	NO. OF BENIGN TUMORS		0	1	0	0
	NO. OF MALIGNANT TUMORS		0	0	0	0
	NO. OF TOTAL TUMORS		0	1	0	0
53 - 78	NO. OF EXAMINED ANIMALS		1	1	3	4
	NO. OF ANIMALS WITH TUMORS		0	1	3	4
	NO. OF ANIMALS WITH SINGLE TUMORS		0	1	1	4
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	2	0
	NO. OF BENIGN TUMORS		0	0	1	0
	NO. OF MALIGNANT TUMORS		0	1	4	4
	NO. OF TOTAL TUMORS		0	1	5	4
79 - 104	NO. OF EXAMINED ANIMALS		9	11	13	15
	NO. OF ANIMALS WITH TUMORS		7	10	12	14
	NO. OF ANIMALS WITH SINGLE TUMORS		5	2	5	6
	NO. OF ANIMALS WITH MULTIPLE TUMORS		2	8	7	8
	NO. OF BENIGN TUMORS		3	7	1	6
	NO. OF MALIGNANT TUMORS		7	17	18	17
	NO. OF TOTAL TUMORS		10	24	19	23
104 - 105	NO. OF EXAMINED ANIMALS		40	34	34	31
	NO. OF ANIMALS WITH TUMORS		32	28	25	26
	NO. OF ANIMALS WITH SINGLE TUMORS		20	14	10	7
	NO. OF ANIMALS WITH MULTIPLE TUMORS		12	14	15	19
	NO. OF BENIGN TUMORS		20	21	23	24
	NO. OF MALIGNANT TUMORS		31	27	23	31
	NO. OF TOTAL TUMORS		51	48	46	55

STUDY NO. : 0190
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	200ppm	800ppm	3200ppm
0 - 105	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
0 - 105	NO. OF EXAMINED ANIMALS		50	50	50	50
	NO. OF ANIMALS WITH TUMORS		39	40	40	44
	NO. OF ANIMALS WITH SINGLE TUMORS		25	18	16	17
	NO. OF ANIMALS WITH MULTIPLE TUMORS		14	22	24	27
	NO. OF BENIGN TUMORS		23	29	25	30
	NO. OF MALIGNANT TUMORS		38	45	45	52
	NO. OF TOTAL TUMORS		61	74	70	82

APPENDIX K 4

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

MOUSE: FEMALE

STUDY NO. : 0190
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	200ppm	800ppm	3200ppm
0 - 52	NO. OF EXAMINED ANIMALS		0	1	0	1
	NO. OF ANIMALS WITH TUMORS		0	1	0	0
	NO. OF ANIMALS WITH SINGLE TUMORS		0	1	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	1	0	0
	NO. OF TOTAL TUMORS		0	1	0	0
53 - 78	NO. OF EXAMINED ANIMALS		3	2	5	3
	NO. OF ANIMALS WITH TUMORS		3	1	5	3
	NO. OF ANIMALS WITH SINGLE TUMORS		3	1	5	3
	NO. OF ANIMALS WITH MULTIPLE TUMORS		0	0	0	0
	NO. OF BENIGN TUMORS		0	0	0	0
	NO. OF MALIGNANT TUMORS		3	1	5	3
	NO. OF TOTAL TUMORS		3	1	5	3
79 - 104	NO. OF EXAMINED ANIMALS		18	17	16	16
	NO. OF ANIMALS WITH TUMORS		16	16	14	15
	NO. OF ANIMALS WITH SINGLE TUMORS		11	12	6	10
	NO. OF ANIMALS WITH MULTIPLE TUMORS		5	4	8	5
	NO. OF BENIGN TUMORS		6	5	5	6
	NO. OF MALIGNANT TUMORS		15	17	18	16
	NO. OF TOTAL TUMORS		21	22	23	22
104 - 105	NO. OF EXAMINED ANIMALS		29	28	29	29
	NO. OF ANIMALS WITH TUMORS		18	22	22	25
	NO. OF ANIMALS WITH SINGLE TUMORS		9	7	7	9
	NO. OF ANIMALS WITH MULTIPLE TUMORS		9	15	15	16
	NO. OF BENIGN TUMORS		11	23	22	28
	NO. OF MALIGNANT TUMORS		18	20	20	23
	NO. OF TOTAL TUMORS		29	43	42	51

STUDY NO. : 0190
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	200ppm	800ppm	3200ppm
0 - 105	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
0 - 105	NO. OF EXAMINED ANIMALS		50	48	50	49
	NO. OF ANIMALS WITH TUMORS		37	40	41	43
	NO. OF ANIMALS WITH SINGLE TUMORS		23	21	18	22
	NO. OF ANIMALS WITH MULTIPLE TUMORS		14	19	23	21
	NO. OF BENIGN TUMORS		17	28	27	34
	NO. OF MALIGNANT TUMORS		36	39	43	42
	NO. OF TOTAL TUMORS		53	67	70	76

APPENDIX L 1

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

RAT : MALE :

(TOW-YERA STUDY)

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS (SUMMARY)
ALL ANIMALS (0-105W)

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Integumentary system/appandage]						
skin/app			<50>	<50>	<50>	<50>
	squamous cell papilloma		2 (4%)	1 (2%)	1 (2%)	0 (0%)
	trichoepithelioma		1 (2%)	0 (0%)	1 (2%)	1 (2%)
	keratoacanthoma		2 (4%)	2 (4%)	0 (0%)	1 (2%)
	basal cell adenoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
subcutis			<50>	<50>	<50>	<50>
	fibroma		1 (2%)	1 (2%)	5 (10%)	5 (10%)
	fibrosarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	liposarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	schwannoma:malignant		2 (4%)	0 (0%)	1 (2%)	0 (0%)
	malignant fibrous histiocytoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	sebaceous adenocarcinoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
[Respiratory system]						
lung			<50>	<50>	<50>	<50>
	bronchiolar-alveolar adenoma		0 (0%)	1 (2%)	7 (14%)	4 (8%)
[Hematopoietic system]						
thymus			<50>	<50>	<50>	<50>
	thymoma:malignant		0 (0%)	1 (2%)	0 (0%)	0 (0%)
spleen			<50>	<50>	<50>	<50>
	sarcoma:NOS		0 (0%)	1 (2%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Hematopoietic system]						
spleen			<50>	<50>	<50>	<50>
	mononuclear cell leukemia		7 (14%)	10 (20%)	10 (20%)	8 (16%)
	hemangiosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
[Digestive system]						
small intes			<50>	<50>	<50>	<50>
	malignant fibrous histiocytoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
liver			<50>	<50>	<50>	<50>
	hepatocellular adenoma		1 (2%)	2 (4%)	2 (4%)	0 (0%)
[Urinary system]						
kidney			<50>	<50>	<50>	<50>
	renal cell carcinoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
urin bladd			<50>	<50>	<50>	<50>
	transitional cell papilloma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	rhabdomyosarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	histiocytic sarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
[Endocrine system]						
pituitary			<50>	<50>	<50>	<50>
	adenoma		22 (44%)	9 (18%)	13 (26%)	5 (10%)
thyroid			<50>	<50>	<50>	<50>
	C-cell adenoma		8 (16%)	9 (18%)	12 (24%)	3 (6%)
	follicular adenoma		1 (2%)	2 (4%)	0 (0%)	2 (4%)
	C-cell carcinoma		1 (2%)	1 (2%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Endocrine system]						
thyroid			<50>	<50>	<50>	<50>
	follicular adenocarcinoma		0 (0%)	0 (0%)	1 (2%)	2 (4%)
panc islet			<50>	<50>	<50>	<50>
	adenoma		0 (0%)	1 (2%)	2 (4%)	0 (0%)
adrenal			<50>	<50>	<50>	<50>
	pheochromocytoma		6 (12%)	7 (14%)	4 (8%)	7 (14%)
	pheochromocytoma:malignant		2 (4%)	1 (2%)	1 (2%)	1 (2%)
[Reproductive system]						
testis			<50>	<50>	<50>	<50>
	interstitial cell tumor		47 (94%)	48 (96%)	47 (94%)	49 (98%)
	rete testis adenoma		1 (2%)	1 (2%)	0 (0%)	0 (0%)
mammary gl			<50>	<50>	<50>	<50>
	adenoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	fibroadenoma		0 (0%)	1 (2%)	2 (4%)	2 (4%)
	adenocarcinoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
prep/cli gl			<50>	<50>	<50>	<50>
	adenoma		2 (4%)	1 (2%)	1 (2%)	1 (2%)
[Nervous system]						
spinal cord			<50>	<50>	<50>	<50>
	glioma:benign		1 (2%)	0 (0%)	0 (0%)	0 (0%)
[Special sense organs/appandage]						
eye			<50>	<50>	<50>	<50>
	melanoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Special sense organs/appandage]						
Zymbal gl			<50>	<50>	<50>	<50>
	adenoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
[Musculoskeletal system]						
muscle			<50>	<50>	<50>	<50>
	sarcoma:NOS		0 (0%)	1 (2%)	0 (0%)	0 (0%)
bone			<50>	<50>	<50>	<50>
	osteosarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
[Body cavities]						
mediastinum			<50>	<50>	<50>	<50>
	schwannoma:malignant		0 (0%)	1 (2%)	0 (0%)	1 (2%)
peritoneum			<50>	<50>	<50>	<50>
	mesothelioma		1 (2%)	2 (4%)	1 (2%)	16 (32%)
retroperit			<50>	<50>	<50>	<50>
	fibrosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

APPENDIX L 2

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

RAT : FEMALE :

(TOW-YERA STUDY)

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Integumentary system/appandage]						
skin/app			<50>	<50>	<50>	<50>
	squamous cell papilloma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	trichoepithelioma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	keratoacanthoma		1 (2%)	0 (0%)	1 (2%)	1 (2%)
subcutis			<50>	<50>	<50>	<50>
	fibroma		1 (2%)	1 (2%)	0 (0%)	2 (4%)
	lipoma		1 (2%)	0 (0%)	1 (2%)	0 (0%)
	schwannoma:malignant		1 (2%)	0 (0%)	0 (0%)	0 (0%)
	malignant fibrous histiocytoma		1 (2%)	0 (0%)	0 (0%)	1 (2%)
[Respiratory system]						
lung			<50>	<50>	<50>	<50>
	bronchiolar-alveolar adenoma		1 (2%)	1 (2%)	2 (4%)	0 (0%)
[Hematopoietic system]						
bone marrow			<50>	<50>	<50>	<50>
	malignant histiocytosis		1 (2%)	0 (0%)	0 (0%)	0 (0%)
thymus			<50>	<50>	<50>	<50>
	malignant lymphoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
spleen			<50>	<50>	<50>	<50>
	mononuclear cell leukemia		9 (18%)	7 (14%)	11 (22%)	10 (20%)
	hemangiosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
[Digestive system]						
tongue			<50>	<50>	<50>	<50>
	squamous cell papilloma		0 (0%)	1 (2%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Digestive system]						
small intes			<50>	<50>	<50>	<50>
	sarcoma:NOS		1 (2%)	0 (0%)	0 (0%)	0 (0%)
liver			<50>	<50>	<50>	<50>
	hepatocellular adenoma		0 (0%)	0 (0%)	0 (0%)	2 (4%)
	cholangiocellular carcinoma		0 (0%)	1 (2%)	0 (0%)	1 (2%)
[Endocrine system]						
pituitary			<50>	<50>	<50>	<50>
	adenoma		19 (38%)	19 (38%)	13 (26%)	16 (32%)
	adenocarcinoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
thyroid			<50>	<50>	<50>	<50>
	C-cell adenoma		2 (4%)	2 (4%)	4 (8%)	3 (6%)
	follicular adenoma		1 (2%)	0 (0%)	0 (0%)	1 (2%)
	follicular adenocarcinoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
panc islet			<50>	<50>	<50>	<50>
	adenoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
adrenal			<50>	<50>	<50>	<50>
	pheochromocytoma		2 (4%)	0 (0%)	0 (0%)	1 (2%)
	cortical adenoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	pheochromocytoma:malignant		0 (0%)	1 (2%)	0 (0%)	0 (0%)
[Reproductive system]						
ovary			<50>	<50>	<50>	<50>
	granulosa-theca cell tumor		1 (2%)	0 (0%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Reproductive system]						
uterus			<50>	<50>	<50>	<50>
	adenoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	leiomyoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
	endometrial stromal polyp		8 (16%)	9 (18%)	8 (16%)	9 (18%)
	adenocarcinoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	leiomyosarcoma		1 (2%)	0 (0%)	0 (0%)	1 (2%)
	hemangiosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
	endometrial stromal sarcoma		0 (0%)	1 (2%)	1 (2%)	0 (0%)
mammary gl			<50>	<50>	<50>	<50>
	fibroadenoma		2 (4%)	7 (14%)	4 (8%)	9 (18%)
	adenocarcinoma		0 (0%)	0 (0%)	2 (4%)	0 (0%)
prep/cli gl			<50>	<50>	<50>	<50>
	adenoma		2 (4%)	2 (4%)	2 (4%)	0 (0%)
[Nervous system]						
brain			<50>	<50>	<50>	<50>
	malignant reticulosis		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	glioma		0 (0%)	0 (0%)	0 (0%)	2 (4%)
[Special sense organs/appandage]						
Zymbal gl			<50>	<50>	<50>	<50>
	adenoma		1 (2%)	1 (2%)	0 (0%)	1 (2%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS (SUMMARY)
ALL ANIMALS (0-105W)

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Musculoskeletal system]						
muscle			<50>	<50>	<50>	<50>
	rhabdomyosarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	sarcoma:NOS		0 (0%)	0 (0%)	0 (0%)	1 (2%)
bone			<50>	<50>	<50>	<50>
	osteosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
[Body cavities]						
peritoneum			<50>	<50>	<50>	<50>
	mesothelioma		1 (2%)	0 (0%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

APPENDIX L 3

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

MOUSE: MALE

(TOW-YERA STUDY)

STUDY NO. : 0190
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS (SUMMARY)
ALL ANIMALS (0-105W)

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Integumentary system/appandage]						
subcutis			<50>	<50>	<50>	<50>
	lipoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	calcifying epithelioma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
	histiocytic sarcoma		2 (4%)	2 (4%)	0 (0%)	2 (4%)
	hemangiosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
[Respiratory system]						
nasal cavit			<50>	<50>	<50>	<50>
	hemangioma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	histiocytic sarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
lung			<49>	<50>	<50>	<50>
	bronchiolar-alveolar adenoma		4 (8%)	8 (16%)	4 (8%)	1 (2%)
	bronchiolar-alveolar carcinoma		3 (6%)	5 (10%)	6 (12%)	10 (20%)
[Hematopoietic system]						
bone marrow			<50>	<50>	<50>	<50>
	hemangioma		2 (4%)	0 (0%)	0 (0%)	0 (0%)
	hemangiosarcoma		0 (0%)	2 (4%)	0 (0%)	0 (0%)
lymph node			<50>	<50>	<50>	<50>
	histiocytic sarcoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	malignant lymphoma		1 (2%)	4 (8%)	11 (22%)	4 (8%)
	hemangiosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Hematopoietic system]						
spleen			<50>	<50>	<50>	<50>
	hemangioma		4 (8%)	3 (6%)	3 (6%)	2 (4%)
	histiocytic sarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	malignant lymphoma		3 (6%)	4 (8%)	3 (6%)	9 (18%)
	mastcytoma:malignant		1 (2%)	0 (0%)	0 (0%)	0 (0%)
	hemangiosarcoma		3 (6%)	1 (2%)	0 (0%)	0 (0%)
[Digestive system]						
tooth			<50>	<50>	<50>	<50>
	odontoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
salivary gl			<50>	<50>	<50>	<50>
	histiocytic sarcoma		0 (0%)	0 (0%)	0 (0%)	2 (4%)
stomach			<50>	<50>	<50>	<50>
	squamous cell papilloma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
small intes			<50>	<50>	<50>	<50>
	histiocytic sarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
large intes			<50>	<50>	<50>	<50>
	histiocytic sarcoma		0 (0%)	1 (2%)	1 (2%)	0 (0%)
liver			<50>	<50>	<50>	<50>
	hemangioma		0 (0%)	2 (4%)	0 (0%)	0 (0%)
	hepatocellular adenoma		10 (20%)	8 (16%)	12 (24%)	15 (30%)
	histiocytic sarcoma		1 (2%)	2 (4%)	4 (8%)	0 (0%)
	hemangiosarcoma		4 (8%)	8 (16%)	7 (14%)	4 (8%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name	Control	200ppm	800ppm	3200ppm
		No. of animals on Study	50	50	50	50
[Digestive system]						
liver			<50>	<50>	<50>	<50>
	hepatocellular carcinoma		14 (28%)	12 (24%)	10 (20%)	15 (30%)
[Urinary system]						
urin bladd			<50>	<50>	<50>	<50>
	histiocytic sarcoma		1 (2%)	0 (0%)	0 (0%)	2 (4%)
[Endocrine system]						
pituitary			<50>	<50>	<50>	<50>
	adenoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	adenocarcinoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
thyroid			<50>	<50>	<50>	<50>
	follicular adenoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
adrenal			<50>	<50>	<50>	<50>
	pheochromocytoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	A-B cell tumor		0 (0%)	2 (4%)	1 (2%)	0 (0%)
[Reproductive system]						
testis			<50>	<50>	<50>	<50>
	interstitial cell tumor		0 (0%)	1 (2%)	0 (0%)	0 (0%)
epididymis			<50>	<50>	<50>	<50>
	histiocytic sarcoma		1 (2%)	1 (2%)	1 (2%)	3 (6%)
prostate			<50>	<50>	<50>	<50>
	histiocytic sarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
[Special sense organs/appandage]						
Harder gl			<50>	<50>	<50>	<50>
	adenoma		1 (2%)	4 (8%)	4 (8%)	8 (16%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 50	800ppm 50	3200ppm 50
[Body cavities]						
peritoneum			<50>	<50>	<50>	<50>
	hemangiosarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
retroperit			<50>	<50>	<50>	<50>
	hemangiosarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

APPENDIX L 4

HISTOLOGICAL FINDINGS : NEOPLASTIC LESIONS : SUMMARY

MOUSE: FEMALE

(TOW-YERA STUDY)

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 48	800ppm 50	3200ppm 49
[Integumentary system/appandage]						
subcutis			<50>	<48>	<50>	<49>
	hemangioma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	liposarcoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	rhabdomyosarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	hemangiosarcoma		0 (0%)	1 (2%)	0 (0%)	1 (2%)
[Respiratory system]						
nasal cavit			<50>	<48>	<50>	<49>
	histiocytic sarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
lung			<50>	<48>	<50>	<49>
	bronchiolar-alveolar adenoma		0 (0%)	0 (0%)	0 (0%)	5 (10%)
	bronchiolar-alveolar carcinoma		1 (2%)	3 (6%)	1 (2%)	2 (4%)
[Hematopoietic system]						
bone marrow			<50>	<48>	<50>	<49>
	hemangioma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	hemangiosarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
lymph node			<50>	<48>	<50>	<49>
	malignant lymphoma		11 (22%)	11 (23%)	12 (24%)	12 (24%)
spleen			<50>	<48>	<50>	<49>
	hemangioma		1 (2%)	2 (4%)	0 (0%)	1 (2%)
	histiocytic sarcoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
	malignant lymphoma		4 (8%)	4 (8%)	5 (10%)	3 (6%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 48	800ppm 50	3200ppm 49
[Hematopoietic system]						
spleen			<50>	<48>	<50>	<49>
	mastcytoma:malignant		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	hemangiosarcoma		0 (0%)	0 (0%)	1 (2%)	1 (2%)
[Digestive system]						
tongue			<50>	<48>	<50>	<49>
	squamous cell carcinoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
salivary gl			<50>	<48>	<50>	<49>
	histiocytic sarcoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
stomach			<50>	<48>	<50>	<49>
	squamous cell papilloma		0 (0%)	1 (2%)	1 (2%)	1 (2%)
	squamous cell carcinoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
liver			<50>	<48>	<50>	<49>
	hepatocellular adenoma		2 (4%)	9 (19%)	14 (28%)	19 (39%)
	histiocytic sarcoma		1 (2%)	0 (0%)	0 (0%)	1 (2%)
	hemangiosarcoma		2 (4%)	4 (8%)	5 (10%)	2 (4%)
	hepatocellular carcinoma		2 (4%)	1 (2%)	2 (4%)	1 (2%)
[Endocrine system]						
pituitary			<50>	<47>	<49>	<49>
	adenoma		10 (20%)	5 (11%)	8 (16%)	3 (6%)
adrenal			<50>	<47>	<50>	<48>
	pheochromocytoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
[Reproductive system]						
ovary			<50>	<47>	<50>	<49>
	papillary adenoma		0 (0%)	4 (9%)	3 (6%)	2 (4%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 48	800ppm 50	3200ppm 49
[Reproductive system]						
uterus			<50>	<48>	<50>	<49>
	hemangioma		1 (2%)	0 (0%)	0 (0%)	0 (0%)
	endometrial stromal polyp		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	leiomyosarcoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
	histiocytic sarcoma		13 (26%)	13 (27%)	6 (12%)	14 (29%)
	hemangiosarcoma		1 (2%)	1 (2%)	1 (2%)	0 (0%)
mammary gl			<50>	<48>	<50>	<49>
	adenocarcinoma		0 (0%)	0 (0%)	1 (2%)	2 (4%)
[Nervous system]						
brain			<50>	<48>	<50>	<49>
	meningioma:malignant		0 (0%)	0 (0%)	1 (2%)	0 (0%)
periph nerv			<50>	<48>	<50>	<49>
	histiocytic sarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
[Special sense organs/appandage]						
Harder gl			<50>	<48>	<50>	<49>
	adenoma		3 (6%)	4 (8%)	1 (2%)	2 (4%)
[Musculoskeletal system]						
bone			<50>	<48>	<50>	<49>
	osteosarcoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
[Body cavities]						
retroperit			<50>	<48>	<50>	<49>
	hemangiosarcoma		1 (2%)	0 (0%)	0 (0%)	0 (0%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

Organ	Findings	Group Name / No. of animals on Study	Control 50	200ppm 48	800ppm 50	3200ppm 49
[Hematopoietic system]						
spleen			<50>	<48>	<50>	<49>
	mastcytoma:malignant		0 (0%)	0 (0%)	1 (2%)	0 (0%)
	hemangiosarcoma		0 (0%)	0 (0%)	1 (2%)	1 (2%)
[Digestive system]						
tongue			<50>	<48>	<50>	<49>
	squamous cell carcinoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
salivary gl			<50>	<48>	<50>	<49>
	histiocytic sarcoma		0 (0%)	0 (0%)	0 (0%)	1 (2%)
stomach			<50>	<48>	<50>	<49>
	squamous cell papilloma		0 (0%)	1 (2%)	1 (2%)	1 (2%)
	squamous cell carcinoma		0 (0%)	0 (0%)	1 (2%)	0 (0%)
liver			<50>	<48>	<50>	<49>
	hepatocellular adenoma		2 (4%)	9 (19%)	14 (28%)	19 (39%)
	histiocytic sarcoma		1 (2%)	0 (0%)	0 (0%)	1 (2%)
	hemangiosarcoma		2 (4%)	4 (8%)	5 (10%)	2 (4%)
	hepatocellular carcinoma		2 (4%)	1 (2%)	2 (4%)	1 (2%)
[Endocrine system]						
pituitary			<50>	<47>	<49>	<49>
	adenoma		10 (20%)	5 (11%)	8 (16%)	3 (6%)
adrenal			<50>	<47>	<50>	<49>
	pheochromocytoma		0 (0%)	1 (2%)	0 (0%)	0 (0%)
[Reproductive system]						
ovary			<50>	<47>	<50>	<49>
	papillary adenoma		0 (0%)	4 (9%)	3 (6%)	2 (4%)

< a > a : Number of animals examined at the site
b (c) b : Number of animals with neoplasm c : b / a * 100

APPENDIX M 1

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANIMALS

RAT : MALE

(TOW-YERA STUDY)

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : subcutis TUMOR : fibroma			
Tumor rate				
Overall rates(a)	1/50(2.0)	1/50(2.0)	5/50(10.0)	5/50(10.0)
Adjusted rates(b)	3.57	2.44	11.36	15.00
Terminal rates(c)	1/34(2.9)	0/36(0.0)	3/36(8.3)	3/28(10.7)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0336*			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0761			
Fisher Exact test(e)		P = 0.2475	P = 0.1210	P = 0.1210
	SITE : subcutis TUMOR : fibroma,fibrosarcoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	1/50(2.0)	5/50(10.0)	5/50(10.0)
Adjusted rates(b)	3.57	0.0	11.36	15.00
Terminal rates(c)	1/34(2.9)	0/36(0.0)	3/36(8.3)	3/28(10.7)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.4848			
Prevalence method(d)	P = 0.0183*			
Combined analysis(d)	P = 0.0323*			
Cochran-Armitage test(e)	P = 0.0761			
Fisher Exact test(e)		P = 0.2475	P = 0.1210	P = 0.1210
	SITE : lung TUMOR : bronchiolar-alveolar adenoma			
Tumor rate				
Overall rates(a)	0/50(0.0)	1/50(2.0)	7/50(14.0)	4/50(8.0)
Adjusted rates(b)	0.0	2.22	20.00	15.00
Terminal rates(c)	0/31(0.0)	0/36(0.0)	6/36(16.7)	3/28(10.7)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0449*			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.1614			
Fisher Exact test(e)		P = 0.4950	P = 0.0101*	P = 0.0688

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : spleen			
	TUMOR : mononuclear cell leukemia			
Tumor rate				
Overall rates(a)	7/50(14.0)	10/50(20.0)	10/50(20.0)	8/50(16.0)
Adjusted rates(b)	11.11	11.11	11.11	14.29
Terminal rates(c)	3/34(8.8)	4/36(11.1)	4/36(11.1)	4/28(14.3)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.4540			
Prevalence method(d)	P = 0.3643			
Combined analysis(d)	P = 0.3875			
Cochran-Armitage test(e)	P = 0.8668			
Fisher Exact test(e)		P = 0.3417	P = 0.3417	P = 0.4854
	SITE : pituitary gland			
	TUMOR : adenoma			
Tumor rate				
Overall rates(a)	22/50(44.0)	9/50(18.0)	13/50(26.0)	5/50(10.0)
Adjusted rates(b)	38.46	20.00	22.50	20.00
Terminal rates(c)	12/34(35.3)	7/36(19.4)	8/36(22.2)	5/28(17.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.9810			
Prevalence method(d)	P = 0.9745			
Combined analysis(d)	P = 0.9968			
Cochran-Armitage test(e)	P = 0.0027**			
Fisher Exact test(e)		P = 0.0314*	P = 0.1322	P = 0.0026**
	SITE : pituitary gland			
	TUMOR : adenoma,adenocarcinoma			
Tumor rate				
Overall rates(a)	22/50(44.0)	9/50(18.0)	13/50(26.0)	5/50(10.0)
Adjusted rates(b)	38.46	20.00	22.50	20.00
Terminal rates(c)	12/34(35.3)	7/36(19.4)	8/36(22.2)	5/28(17.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.9810			
Prevalence method(d)	P = 0.9745			
Combined analysis(d)	P = 0.9968			
Cochran-Armitage test(e)	P = 0.0027**			
Fisher Exact test(e)		P = 0.0314*	P = 0.1322	P = 0.0026**

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : thyroid			
	TUMOR : C-cell adenoma			
Tumor rate				
Overall rates(a)	8/50(16.0)	9/50(18.0)	12/50(24.0)	3/50(6.0)
Adjusted rates(b)	18.18	20.45	29.27	10.71
Terminal rates(c)	3/34(8.8)	6/36(16.7)	10/36(27.8)	3/28(10.7)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.9673			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0568			
Fisher Exact test(e)		P = 0.4846	P = 0.2846	P = 0.1322
	SITE : thyroid			
	TUMOR : C-cell adenoma,C-cell carcinoma			
Tumor rate				
Overall rates(a)	9/50(18.0)	10/50(20.0)	12/50(24.0)	3/50(6.0)
Adjusted rates(b)	20.45	22.73	29.27	10.71
Terminal rates(c)	4/34(11.8)	7/36(19.4)	10/36(27.8)	3/28(10.7)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.9811			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0324*			
Fisher Exact test(e)		P = 0.4839	P = 0.3620	P = 0.0899
	SITE : thyroid			
	TUMOR : follicular adenoma,follicular adenocarcinoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	2/50(4.0)	1/50(2.0)	4/50(8.0)
Adjusted rates(b)	2.63	5.56	0.0	15.00
Terminal rates(c)	0/34(0.0)	2/36(5.6)	0/36(0.0)	4/28(14.3)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.2999			
Prevalence method(d)	P = 0.0285*			
Combined analysis(d)	P = 0.0384*			
Cochran-Armitage test(e)	P = 0.1132			
Fisher Exact test(e)		P = 0.4926	P = 0.2475	P = 0.1998

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : adrenal gland			
	TUMOR : pheochromocytoma			
Tumor rate				
Overall rates(a)	6/50(12.0)	7/50(14.0)	4/50(8.0)	7/50(14.0)
Adjusted rates(b)	17.86	15.79	9.76	17.95
Terminal rates(c)	5/34(14.7)	5/36(13.9)	3/36(8.3)	4/28(14.3)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.2742			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.7588			
Fisher Exact test(e)		P = 0.4863	P = 0.3944	P = 0.4863
	SITE : adrenal gland			
	TUMOR : pheochromocytoma,pheochromocytoma:malignant			
Tumor rate				
Overall rates(a)	8/50(16.0)	8/50(16.0)	5/50(10.0)	8/50(16.0)
Adjusted rates(b)	19.44	18.42	10.00	20.69
Terminal rates(c)	6/34(17.6)	6/36(16.7)	3/36(8.3)	5/28(17.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.6761			
Prevalence method(d)	P = 0.2497			
Combined analysis(d)	P = 0.3225			
Cochran-Armitage test(e)	P = 0.9060			
Fisher Exact test(e)		P = 0.3943	P = 0.3141	P = 0.3943
	SITE : testis			
	TUMOR : interstitial cell tumor			
Tumor rate				
Overall rates(a)	46/50(92.0)	48/50(96.0)	47/50(94.0)	49/50(98.0)
Adjusted rates(b)	100.00	97.92	100.00	100.00
Terminal rates(c)	34/34(100.0)	35/36(97.2)	35/36(97.2)	28/28(100.0)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.3054			
Prevalence method(d)	P = 0.0522			
Combined analysis(d)	P = 0.0666			
Cochran-Armitage test(e)	P = 0.2524			
Fisher Exact test(e)		P = 0.4982	P = 0.4723	P = 0.4693

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : peritoneum TUMOR : mesothelioma			
Tumor rate				
Overall rates(a)	1/50(2.0)	2/50(4.0)	1/50(2.0)	16/50(32.0)
Adjusted rates(b)	0.0	3.33	3.33	25.00
Terminal rates(c)	0/34(0.0)	1/36(2.8)	1/36(2.8)	5/28(17.9)
Statistical analysis				
Peto test				
Standard method(d)	P < 0.0001**			
Prevalence method(d)	P = 0.0001**			
Combined analysis(d)	P < 0.0001**			
Cochran-Armitage test(e)	P < 0.0001**			
Fisher Exact test(e)		P = 0.4926	P = 0.2475	P = 0.0004**

(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 P-values associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combined analysis : Death analysis + Incidental tumor test
(e): The Cochran-Armitage and Fisher 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 statistical analysis.
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

APPENDIX M 2

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANIMALS

RAT : FEMALE

(TOW-YERA STUDY)

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : spleen			
	TUMOR : mononuclear cell leukemia			
Tumor rate				
Overall rates(a)	9/50(18.0)	7/50(14.0)	11/50(22.0)	10/50(20.0)
Adjusted rates(b)	16.67	7.69	19.05	15.56
Terminal rates(c)	6/38(15.8)	2/38(5.3)	8/42(19.0)	4/38(10.5)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.4111			
Prevalence method(d)	P = 0.3928			
Combined analysis(d)	P = 0.3714			
Cochran-Armitage test(e)	P = 0.6325			
Fisher Exact test(e)		P = 0.4234	P = 0.4357	P = 0.4839
	SITE : pituitary gland			
	TUMOR : adenoma			
Tumor rate				
Overall rates(a)	19/50(38.0)	18/50(36.0)	13/50(26.0)	16/50(32.0)
Adjusted rates(b)	42.11	37.93	26.19	31.11
Terminal rates(c)	16/38(42.1)	13/38(34.2)	11/42(26.2)	11/38(28.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.7582			
Prevalence method(d)	P = 0.7460			
Combined analysis(d)	P = 0.8253			
Cochran-Armitage test(e)	P = 0.6289			
Fisher Exact test(e)		P = 0.4792	P = 0.2359	P = 0.4055
	SITE : pituitary gland			
	TUMOR : adenoma,adenocarcinoma			
Tumor rate				
Overall rates(a)	20/50(40.0)	18/50(36.0)	13/50(26.0)	16/50(32.0)
Adjusted rates(b)	42.11	37.93	26.19	31.11
Terminal rates(c)	16/38(42.1)	13/38(34.2)	11/42(26.2)	11/38(28.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.8258			
Prevalence method(d)	P = 0.7460			
Combined analysis(d)	P = 0.8534			
Cochran-Armitage test(e)	P = 0.5453			
Fisher Exact test(e)		P = 0.4661	P = 0.1960	P = 0.3534

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : thyroid TUMOR : C-cell adenoma			
Tumor rate				
Overall rates(a)	2/50(4.0)	2/50(4.0)	4/50(8.0)	3/50(6.0)
Adjusted rates(b)	6.67	6.90	8.51	7.89
Terminal rates(c)	2/38(5.3)	2/38(5.3)	3/42(7.1)	3/38(7.9)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.3421			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.6883			
Fisher Exact test(e)		P = 0.3088	P = 0.3574	P = 0.4909
	SITE : thyroid TUMOR : C-cell adenoma,C-cell carcinoma			
Tumor rate				
Overall rates(a)	2/50(4.0)	2/50(4.0)	4/50(8.0)	3/50(6.0)
Adjusted rates(b)	6.67	6.90	8.51	7.89
Terminal rates(c)	2/38(5.3)	2/38(5.3)	3/42(7.1)	3/38(7.9)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.3421			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.6883			
Fisher Exact test(e)		P = 0.3088	P = 0.3574	P = 0.4909
	SITE : uterus TUMOR : endometrial stromal polyp			
Tumor rate				
Overall rates(a)	8/50(16.0)	9/50(18.0)	8/50(16.0)	9/50(18.0)
Adjusted rates(b)	17.39	20.69	16.67	19.51
Terminal rates(c)	5/38(13.2)	6/38(15.8)	6/42(14.3)	7/38(18.4)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.4898			
Prevalence method(d)	P = 0.3867			
Combined analysis(d)	P = 0.4365			
Cochran-Armitage test(e)	P = 0.8479			
Fisher Exact test(e)		P = 0.4846	P = 0.3943	P = 0.4846

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : uterus			
	TUMOR : endometrial stromal polyp,endometrial stromal sarcoma			
Tumor rate				
Overall rates(a)	8/50(16.0)	10/50(20.0)	9/50(18.0)	9/50(18.0)
Adjusted rates(b)	17.39	24.14	18.75	19.51
Terminal rates(c)	5/38(13.2)	7/38(18.4)	7/42(16.7)	7/38(18.4)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.4898			
Prevalence method(d)	P = 0.4519			
Combined analysis(d)	P = 0.5009			
Cochran-Armitage test(e)	P = 0.9770			
Fisher Exact test(e)		P = 0.4300	P = 0.4846	P = 0.4846
	SITE : mammary gland			
	TUMOR : fibroadenoma			
Tumor rate				
Overall rates(a)	2/50(4.0)	7/50(14.0)	4/50(8.0)	9/50(18.0)
Adjusted rates(b)	5.13	17.07	8.70	20.00
Terminal rates(c)	1/38(2.6)	6/38(15.8)	2/42(4.8)	6/38(15.8)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0565			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0681			
Fisher Exact test(e)		P = 0.1045	P = 0.3574	P = 0.0427*

(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 P-values associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combined analysis : Death analysis + Incidental tumor test
(e): The Cochran-Armitage and Fisher 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 statistical analysis.
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

APPENDIX M 3

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANIMALS

MOSUE : MALE

(TOW-YERA STUDY)

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : lung			
	TUMOR : bronchiolar-alveolar adenoma			
Tumor rate				
Overall rates(a)	4/49(8.2)	8/50(16.0)	4/50(8.0)	1/50(2.0)
Adjusted rates(b)	10.26	20.00	11.76	3.23
Terminal rates(c)	4/39(10.3)	6/34(17.6)	4/34(11.8)	1/31(3.2)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.9667			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0483*			
Fisher Exact test(e)		P = 0.2271	P = 0.3474	P = 0.1936
	SITE : lung			
	TUMOR : bronchiolar-alveolar carcinoma			
Tumor rate				
Overall rates(a)	3/49(6.1)	5/50(10.0)	6/50(12.0)	10/50(20.0)
Adjusted rates(b)	7.69	11.76	14.71	19.35
Terminal rates(c)	3/39(7.7)	4/34(11.8)	5/34(14.7)	6/31(19.4)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.0354*			
Prevalence method(d)	P = 0.0505			
Combined analysis(d)	P = 0.0098**			
Cochran-Armitage test(e)	P = 0.0335*			
Fisher Exact test(e)		P = 0.3899	P = 0.2829	P = 0.0647
	SITE : lung			
	TUMOR : bronchiolar-alveolar adenoma,bronchiolar-alveolar carcinoma			
Tumor rate				
Overall rates(a)	7/49(14.3)	13/50(26.0)	10/50(20.0)	11/50(22.0)
Adjusted rates(b)	17.95	31.43	26.47	22.58
Terminal rates(c)	7/39(17.9)	10/34(29.4)	9/34(26.5)	7/31(22.6)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.0354*			
Prevalence method(d)	P = 0.4649			
Combined analysis(d)	P = 0.1964			
Cochran-Armitage test(e)	P = 0.7280			
Fisher Exact test(e)		P = 0.1741	P = 0.3564	P = 0.2847

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : lymph node TUMOR : malignant lymphoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	4/50(8.0)	11/50(22.0)	4/50(8.0)
Adjusted rates(b)	2.50	2.94	17.65	6.45
Terminal rates(c)	1/40(2.5)	1/34(2.9)	6/34(17.6)	2/31(6.5)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.3373			
Prevalence method(d)	P = 0.3553			
Combined analysis(d)	P = 0.3009			
Cochran-Armitage test(e)	P = 0.7959			
Fisher Exact test(e)		P = 0.1998	P = 0.0052**	P = 0.1998
	SITE : spleen TUMOR : hemangioma			
Tumor rate				
Overall rates(a)	4/50(8.0)	3/50(6.0)	3/50(6.0)	2/50(4.0)
Adjusted rates(b)	10.00	6.25	8.82	6.45
Terminal rates(c)	4/40(10.0)	0/34(0.0)	3/34(8.8)	2/31(6.5)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.7365			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.4552			
Fisher Exact test(e)		P = 0.4895	P = 0.4895	P = 0.3574
	SITE : spleen TUMOR : malignant lymphoma			
Tumor rate				
Overall rates(a)	3/50(6.0)	4/50(8.0)	3/50(6.0)	9/50(18.0)
Adjusted rates(b)	5.00	11.76	4.88	16.13
Terminal rates(c)	2/40(5.0)	4/34(11.8)	1/34(2.9)	5/31(16.1)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.0116*			
Prevalence method(d)	P = 0.0917			
Combined analysis(d)	P = 0.0077**			
Cochran-Armitage test(e)	P = 0.0227*			
Fisher Exact test(e)		P = 0.4895	P = 0.3392	P = 0.0899

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : spleen TUMOR : hemangiosarcoma			
Tumor rate				
Overall rates(a)	3/50(6.0)	1/50(2.0)	0/50(0.0)	0/50(0.0)
Adjusted rates(b)	5.00	0.0	0.0	0.0
Terminal rates(c)	2/40(5.0)	0/34(0.0)	0/34(0.0)	0/31(0.0)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.8424			
Prevalence method(d)	P = 0.8988			
Combined analysis(d)	P = 0.9624			
Cochran-Armitage test(e)	P = 0.1133			
Fisher Exact test(e)		P = 0.3235	P = 0.1325	P = 0.1325
	SITE : spleen TUMOR : hemangioma,hemangiosarcoma			
Tumor rate				
Overall rates(a)	7/50(14.0)	4/50(8.0)	3/50(6.0)	2/50(4.0)
Adjusted rates(b)	15.00	6.38	8.82	6.45
Terminal rates(c)	6/40(15.0)	0/34(0.0)	3/34(8.8)	2/31(6.5)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.8424			
Prevalence method(d)	P = 0.8616			
Combined analysis(d)	P = 0.9218			
Cochran-Armitage test(e)	P = 0.1413			
Fisher Exact test(e)		P = 0.2958	P = 0.1917	P = 0.1045
	SITE : liver TUMOR : hepatocellular adenoma			
Tumor rate				
Overall rates(a)	10/50(20.0)	8/50(16.0)	12/50(24.0)	15/50(30.0)
Adjusted rates(b)	22.73	20.51	29.41	38.71
Terminal rates(c)	8/40(20.0)	6/34(17.6)	10/34(29.4)	12/31(38.7)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0352*			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.1127			
Fisher Exact test(e)		P = 0.4300	P = 0.4406	P = 0.2516

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : liver TUMOR : histiocytic sarcoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	2/50(4.0)	4/50(8.0)	0/50(0.0)
Adjusted rates(b)	0.0	0.0	0.0	0.0
Terminal rates(c)	0/40(0.0)	0/34(0.0)	0/34(0.0)	0/31(0.0)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.8379			
Prevalence method(d)	P = ------			
Combined analysis(d)	P = 0.8379			
Cochran-Armitage test(e)	P = 0.2581			
Fisher Exact test(e)		P = 0.4926	P = 0.1998	P = 0.4950
	SITE : liver TUMOR : hemangiosarcoma			
Tumor rate				
Overall rates(a)	4/50(8.0)	8/50(16.0)	7/50(14.0)	4/50(8.0)
Adjusted rates(b)	6.52	17.78	8.82	6.45
Terminal rates(c)	2/40(5.0)	5/34(14.7)	3/34(8.8)	2/31(6.5)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.2067			
Prevalence method(d)	P = 0.8707			
Combined analysis(d)	P = 0.6670			
Cochran-Armitage test(e)	P = 0.4709			
Fisher Exact test(e)		P = 0.2169	P = 0.2958	P = 0.3579
	SITE : liver TUMOR : hepatocellular carcinoma			
Tumor rate				
Overall rates(a)	14/50(28.0)	12/50(24.0)	10/50(20.0)	15/50(30.0)
Adjusted rates(b)	30.00	25.64	20.51	32.26
Terminal rates(c)	12/40(30.0)	8/34(23.5)	6/34(17.6)	10/31(32.3)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.1111			
Prevalence method(d)	P = 0.3632			
Combined analysis(d)	P = 0.1844			
Cochran-Armitage test(e)	P = 0.5374			
Fisher Exact test(e)		P = 0.4489	P = 0.3071	P = 0.4810

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : liver			
	TUMOR : hemangioma,hemangiosarcoma			
Tumor rate				
Overall rates(a)	4/50(8.0)	10/50(20.0)	7/50(14.0)	4/50(8.0)
Adjusted rates(b)	6.52	22.86	8.82	6.45
Terminal rates(c)	2/40(5.0)	7/34(20.6)	3/34(8.8)	2/31(6.5)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.2067			
Prevalence method(d)	P = 0.9193			
Combined analysis(d)	P = 0.7500			
Cochran-Armitage test(e)	P = 0.3269			
Fisher Exact test(e)		P = 0.1108	P = 0.2958	P = 0.3579
	SITE : liver			
	TUMOR : hepatocellular adenoma,hepatocellular carcinoma			
Tumor rate				
Overall rates(a)	23/50(46.0)	19/50(38.0)	21/50(42.0)	26/50(52.0)
Adjusted rates(b)	47.73	43.59	45.00	58.06
Terminal rates(c)	19/40(47.5)	14/34(41.2)	15/34(44.1)	18/31(58.1)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.1111			
Prevalence method(d)	P = 0.1431			
Combined analysis(d)	P = 0.0684			
Cochran-Armitage test(e)	P = 0.2484			
Fisher Exact test(e)		P = 0.3695	P = 0.4721	P = 0.4301
	SITE : epididymis			
	TUMOR : histiocytic sarcoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	1/50(2.0)	1/50(2.0)	3/50(6.0)
Adjusted rates(b)	2.50	2.94	2.04	4.35
Terminal rates(c)	1/40(2.5)	1/34(2.9)	0/34(0.0)	0/31(0.0)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.1443			
Prevalence method(d)	P = 0.2083			
Combined analysis(d)	P = 0.0848			
Cochran-Armitage test(e)	P = 0.1624			
Fisher Exact test(e)		P = 0.2475	P = 0.2475	P = 0.3235

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : Harderian gland			
	TUMOR : adenoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	4/50(8.0)	4/50(8.0)	8/50(16.0)
Adjusted rates(b)	2.50	11.76	11.76	20.00
Terminal rates(c)	1/40(2.5)	4/34(11.8)	4/34(11.8)	5/31(16.1)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0082**			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0195*			
Fisher Exact test(e)		P = 0.1998	P = 0.1998	P = 0.0254*

(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 P-values associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combined analysis : Death analysis + Incidental tumor test
(e): The Cochran-Armitage and Fisher 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 statistical analysis.
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : ALL SITE TUMOR : hemangioma			
Tumor rate				
Overall rates(a)	6/50(12.0)	5/50(10.0)	4/50(8.0)	2/50(4.0)
Adjusted rates(b)	13.04	10.42	11.76	6.45
Terminal rates(c)	5/40(12.5)	2/34(5.9)	4/34(11.8)	2/31(6.5)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.9120			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.1496			
Fisher Exact test(e)		P = 0.4872	P = 0.3944	P = 0.1606
	SITE : ALL SITE TUMOR : malignant lymphoma			
Tumor rate				
Overall rates(a)	4/50(8.0)	8/50(16.0)	14/50(28.0)	13/50(26.0)
Adjusted rates(b)	7.50	14.71	21.05	22.58
Terminal rates(c)	3/40(7.5)	5/34(14.7)	7/34(20.6)	7/31(22.6)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.0377*			
Prevalence method(d)	P = 0.1018			
Combined analysis(d)	P = 0.0168*			
Cochran-Armitage test(e)	P = 0.0599			
Fisher Exact test(e)		P = 0.2169	P = 0.0253*	P = 0.0371*

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : ALL SITE TUMOR : hemangiosarcoma			
Tumor rate				
Overall rates(a)	7/50(14.0)	11/50(22.0)	7/50(14.0)	4/50(8.0)
Adjusted rates(b)	12.50	22.86	8.82	6.45
Terminal rates(c)	5/40(12.5)	7/34(20.6)	3/34(8.8)	2/31(6.5)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.3837			
Prevalence method(d)	P = 0.9577			
Combined analysis(d)	P = 0.8876			
Cochran-Armitage test(e)	P = 0.1210			
Fisher Exact test(e)		P = 0.2711	P = 0.3882	P = 0.2958

(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 P-values associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combined analysis : Death analysis + Incidental tumor test
(e): The Cochran-Armitage and Fisher 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 statistical analysis.
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

APPENDIX M 4

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANIMALS

MOSUE :FEMALE

(TOW-YERA STUDY)

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : lung			
	TUMOR : bronchiolar-alveolar adenoma			
Tumor rate				
Overall rates(a)	0/50(0.0)	0/48(0.0)	0/50(0.0)	5/49(10.2)
Adjusted rates(b)	0.0	0.0	0.0	13.79
Terminal rates(c)	0/29(0.0)	0/28(0.0)	0/29(0.0)	4/29(13.8)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0001**?			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0001**			
Fisher Exact test(e)		P = 0.5000	P = 0.5000	P = 0.0344*
	SITE : lung			
	TUMOR : bronchiolar-alveolar carcinoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	3/48(6.3)	1/50(2.0)	2/49(4.1)
Adjusted rates(b)	0.0	3.57	3.45	6.90
Terminal rates(c)	0/29(0.0)	1/28(3.6)	1/29(3.4)	2/29(6.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.9132			
Prevalence method(d)	P = 0.1207			
Combined analysis(d)	P = 0.4274			
Cochran-Armitage test(e)	P = 0.8880			
Fisher Exact test(e)		P = 0.3087	P = 0.2475	P = 0.5000
	SITE : lung			
	TUMOR : bronchiolar-alveolar adenoma,bronchiolar-alveolar carcinoma			
Tumor rate				
Overall rates(a)	1/50(2.0)	3/48(6.3)	1/50(2.0)	7/49(14.3)
Adjusted rates(b)	0.0	3.57	3.45	20.69
Terminal rates(c)	0/29(0.0)	1/28(3.6)	1/29(3.4)	6/29(20.7)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.9132			
Prevalence method(d)	P = 0.0002**			
Combined analysis(d)	P = 0.0085**			
Cochran-Armitage test(e)	P = 0.0086**			
Fisher Exact test(e)		P = 0.3087	P = 0.2475	P = 0.0406*

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : lymph node			
	TUMOR : malignant lymphoma			
Tumor rate				
Overall rates(a)	11/50(22.0)	11/48(22.9)	12/50(24.0)	12/49(24.5)
Adjusted rates(b)	10.81	25.81	12.90	27.59
Terminal rates(c)	3/29(10.3)	7/28(25.0)	3/29(10.3)	8/29(27.6)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.7026			
Prevalence method(d)	P = 0.2023			
Combined analysis(d)	P = 0.4253			
Cochran-Armitage test(e)	P = 0.7909			
Fisher Exact test(e)		P = 0.4411	P = 0.4826	P = 0.5000
	SITE : spleen			
	TUMOR : malignant lymphoma			
Tumor rate				
Overall rates(a)	4/50(8.0)	4/48(8.3)	5/50(10.0)	3/49(6.1)
Adjusted rates(b)	10.34	7.14	10.34	10.34
Terminal rates(c)	3/29(10.3)	2/28(7.1)	3/29(10.3)	3/29(10.3)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.8772			
Prevalence method(d)	P = 0.4096			
Combined analysis(d)	P = 0.6804			
Cochran-Armitage test(e)	P = 0.6283			
Fisher Exact test(e)		P = 0.3793	P = 0.4883	P = 0.4788
	SITE : liver			
	TUMOR : hepatocellular adenoma			
Tumor rate				
Overall rates(a)	2/50(4.0)	9/48(18.8)	14/50(28.0)	19/49(38.8)
Adjusted rates(b)	5.56	28.57	46.67	58.62
Terminal rates(c)	1/29(3.4)	8/28(28.6)	13/29(44.8)	17/29(58.6)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0001**			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0002**			
Fisher Exact test(e)		P = 0.0374*	P = 0.0042**	P = 0.0003**

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : liver			
	TUMOR : hemangiosarcoma			
Tumor rate				
Overall rates(a)	2/50(4.0)	4/48(8.3)	5/50(10.0)	2/49(4.1)
Adjusted rates(b)	6.90	10.71	14.29	3.45
Terminal rates(c)	2/29(6.9)	3/28(10.7)	2/29(6.9)	1/29(3.4)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.2380			
Prevalence method(d)	P = 0.8193			
Combined analysis(d)	P = 0.6960			
Cochran-Armitage test(e)	P = 0.5854			
Fisher Exact test(e)		P = 0.3391	P = 0.2425	P = 0.3162
	SITE : liver			
	TUMOR : hepatocellular adenoma,hepatocellular carcinoma			
Tumor rate				
Overall rates(a)	4/50(8.0)	10/48(20.8)	16/50(32.0)	20/49(40.8)
Adjusted rates(b)	11.11	31.25	50.00	62.07
Terminal rates(c)	3/29(10.3)	8/28(28.6)	14/29(48.3)	18/29(62.1)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.0002**			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.0007**			
Fisher Exact test(e)		P = 0.0983	P = 0.0117*	P = 0.0021**
	SITE : pituitary gland			
	TUMOR : adenoma			
Tumor rate				
Overall rates(a)	10/50(20.0)	5/47(10.6)	8/49(16.3)	3/49(6.1)
Adjusted rates(b)	20.69	14.29	21.43	5.56
Terminal rates(c)	6/29(20.7)	4/28(14.3)	6/28(21.4)	1/29(3.4)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.8225			
Prevalence method(d)	P = 0.9228			
Combined analysis(d)	P = 0.9598			
Cochran-Armitage test(e)	P = 0.0870			
Fisher Exact test(e)		P = 0.2086	P = 0.4459	P = 0.0647

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : ovary TUMOR : papillary adenoma			
Tumor rate				
Overall rates(a)	0/50(0.0)	4/47(8.5)	3/50(6.0)	2/49(4.1)
Adjusted rates(b)	0.0	10.71	6.82	6.67
Terminal rates(c)	0/29(0.0)	3/28(10.7)	1/29(3.4)	1/29(3.4)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.4778			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.9719			
Fisher Exact test(e)		P = 0.0612	P = 0.1325	P = 0.2525
	SITE : uterus TUMOR : histiocytic sarcoma			
Tumor rate				
Overall rates(a)	13/50(26.0)	13/48(27.1)	6/50(12.0)	14/49(28.6)
Adjusted rates(b)	24.14	17.86	6.90	20.69
Terminal rates(c)	7/29(24.1)	5/28(17.9)	2/29(6.9)	6/29(20.7)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.2598			
Prevalence method(d)	P = 0.5037			
Combined analysis(d)	P = 0.3180			
Cochran-Armitage test(e)	P = 0.5963			
Fisher Exact test(e)		P = 0.4494	P = 0.1099	P = 0.5000

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : Harderian gland TUMOR : adenoma			
Tumor rate				
Overall rates(a)	3/50(6.0)	4/48(8.3)	1/50(2.0)	2/49(4.1)
Adjusted rates(b)	7.69	14.29	3.45	6.90
Terminal rates(c)	2/29(6.9)	4/28(14.3)	1/29(3.4)	2/29(6.9)
Statistical analysis				
Peto test				
Standard method(d)	P = ------			
Prevalence method(d)	P = 0.7340			
Combined analysis(d)	P = ------			
Cochran-Armitage test(e)	P = 0.5278			
Fisher Exact test(e)		P = 0.4893	P = 0.3235	P = 0.4816

(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 P-values associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combined analysis : Death analysis + Incidental tumor test
(e): The Cochran-Armitage and Fisher 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 statistical analysis.
Significant difference ; * : P ≦ 0.05 ** : P ≦ 0.01

Group Name	Control	200ppm	800ppm	3200ppm
	SITE : ALL SITE TUMOR : malignant lymphoma			
Tumor rate				
Overall rates(a)	15/50(30.0)	15/48(31.3)	17/50(34.0)	15/49(30.6)
Adjusted rates(b)	20.69	32.26	22.58	37.93
Terminal rates(c)	6/29(20.7)	9/28(32.1)	6/29(20.7)	11/29(37.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.8407			
Prevalence method(d)	P = 0.2034			
Combined analysis(d)	P = 0.5453			
Cochran-Armitage test(e)	P = 0.9656			
Fisher Exact test(e)		P = 0.4562	P = 0.4586	P = 0.4367
	SITE : ALL SITE TUMOR : hemangiosarcoma			
Tumor rate				
Overall rates(a)	4/50(8.0)	6/48(12.5)	8/50(16.0)	3/49(6.1)
Adjusted rates(b)	7.50	14.29	20.59	6.90
Terminal rates(c)	2/29(6.9)	4/28(14.3)	4/29(13.8)	2/29(6.9)
Statistical analysis				
Peto test				
Standard method(d)	P = 0.5793			
Prevalence method(d)	P = 0.8055			
Combined analysis(d)	P = 0.8148			
Cochran-Armitage test(e)	P = 0.3840			
Fisher Exact test(e)		P = 0.3709	P = 0.2169	P = 0.4788

(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 P-values associated with the trend test.
Standard method : Death analysis
Prevalence method : Incidental tumor test
Combined analysis : Death analysis + Incidental tumor test
(e): The Cochran-Armitage and Fisher 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 statistical analysis.
Significant difference ; * : $P \leqq 0.05$ ** : $P \leqq 0.01$

APPENDIX N 1

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

RAT: MALE : DEAD AND MORIBUND ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control 16	200ppm 14	800ppm 14	3200ppm 22
[Respiratory system]						
trachea			<16>	<14>	<14>	<22>
	leukemic cell infiltration		0	1	0	0
lung			<16>	<14>	<14>	<22>
	leukemic cell infiltration		4	5	6	4
	metastasis:thyroid tumor		0	0	1	0
	metastasis:subcutis tumor		1	0	0	1
	metastasis:preputial/clitoral gland tumor		1	0	0	0
[Hematopoietic system]						
bone marrow			<16>	<14>	<14>	<22>
	leukemic cell infiltration		3	7	6	5
	metastasis:subcutis tumor		1	0	0	0
lymph node			<16>	<14>	<14>	<22>
	leukemic cell infiltration		0	0	1	1
	metastasis:subcutis tumor		0	0	0	1
[Circulatory system]						
heart			<16>	<14>	<14>	<22>
	leukemic cell infiltration		0	0	0	1
[Digestive system]						
liver			<16>	<14>	<14>	<22>
	leukemic cell infiltration		4	5	6	4

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control 16	200ppm 14	800ppm 14	3200ppm 22
[Digestive system]						
pancreas			<16>	<14>	<14>	<22>
	leukemic cell infiltration		0	1	0	1
[Urinary system]						
kidney			<16>	<14>	<14>	<22>
	leukemic cell infiltration		0	3	1	2
[Nervous system]						
brain			<16>	<14>	<14>	<22>
	leukemic cell infiltration		1	4	0	2
spinal cord			<16>	<14>	<14>	<22>
	leukemic cell infiltration		1	3	0	1

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX N 2

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

RAT: FEMALE : DEAD AND MORIBUND ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control 12	200ppm 12	800ppm 8	3200ppm 12
[Respiratory system]						
lung			<12>	<12>	< 8>	<12>
	leukemic cell infiltration		1	5	3	3
	metastasis:uterus tumor		0	0	0	1
	metastasis:subcutis tumor		1	0	0	1
	metastasis:bone tumor		1	0	0	0
[Hematopoietic system]						
bone marrow			<12>	<12>	< 8>	<12>
	leukemic cell infiltration		1	5	3	3
	metastasis:subcutis tumor		1	0	0	0
lymph node			<12>	<12>	< 8>	<12>
	leukemic cell infiltration		0	0	0	1
	metastasis:bone tumor		1	0	0	0
[Circulatory system]						
heart			<12>	<12>	< 8>	<12>
	metastasis:subcutis tumor		1	0	0	0
[Digestive system]						
liver			<12>	<12>	< 8>	<12>
	leukemic cell infiltration		1	5	3	3
	metastasis:subcutis tumor		1	0	0	1

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control	200ppm	800ppm	3200ppm
			12	12	8	12
[Digestive system]						
liver			<12>	<12>	< 8>	<12>
	metastasis:bone marrow tumor		1	0	0	0
[Urinary system]						
kidney			<12>	<12>	< 8>	<12>
	leukemic cell infiltration		0	0	1	0
[Nervous system]						
brain			<12>	<12>	< 8>	<12>
	leukemic cell infiltration		0	1	3	0
spinal cord			<12>	<12>	< 8>	<12>
	leukemic cell infiltration		0	2	2	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX N 3

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

RAT: MALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control 34	200ppm 36	800ppm 36	3200ppm 28
[Respiratory system]						
lung			<34>	<36>	<36>	<28>
	leukemic cell infiltration		1	0	1	1
	metastasis:adrenal tumor		0	1	0	0
	metastasis:thyroid tumor		0	0	0	1
[Hematopoietic system]						
bone marrow			<34>	<36>	<36>	<28>
	leukemic cell infiltration		2	0	0	0
lymph node			<34>	<36>	<36>	<28>
	leukemic cell infiltration		1	0	0	0
	metastasis:bone tumor		0	1	0	0
[Circulatory system]						
heart			<34>	<36>	<36>	<28>
	leukemic cell infiltration		1	1	0	0
[Digestive system]						
liver			<34>	<36>	<36>	<28>
	leukemic cell infiltration		2	0	1	3
[Urinary system]						
kidney			<34>	<36>	<36>	<28>
	leukemic cell infiltration		0	0	1	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control	200ppm	800ppm	3200ppm
			34	36	36	28
[Special sense organs/appandage]						
Harder gl			<34>	<36>	<36>	<28>
	leukemic cell infiltration		1	0	0	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX N 4

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

RAT: FEMALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0189
ANIMAL : RAT F344
REPORT TYPE : A1
SEX : FEMALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control 38	200ppm 38	800ppm 42	3200ppm 38
[Respiratory system]						
lung			<38>	<38>	<42>	<38>
	leukemic cell infiltration		3	0	3	1
	metastasis:uterus tumor		0	1	0	0
	metastasis:thyroid tumor		0	1	0	0
[Hematopoietic system]						
bone marrow			<38>	<38>	<42>	<38>
	leukemic cell infiltration		2	0	2	1
lymph node			<38>	<38>	<42>	<38>
	leukemic cell infiltration		1	0	1	0
[Digestive system]						
stomach			<38>	<38>	<42>	<38>
	leukemic cell infiltration		1	0	0	0
liver			<38>	<38>	<42>	<38>
	leukemic cell infiltration		2	2	3	1
[Reproductive system]						
ovary			<38>	<38>	<42>	<38>
	leukemic cell infiltration		1	0	0	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX N 5

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

MOUSE: MALE : DEAD AND MORIBUND ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0190
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 on Study	Control 10	200ppm 16	800ppm 16	3200ppm 19
[Integumentary system/appandage]						
skin/app			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	0	1
[Respiratory system]						
nasal cavit			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	0	1
	metastasis:liver tumor		1	0	0	0
	metastasis:salivary gland tumor		0	0	0	1
lung			<10>	<16>	<16>	<19>
	leukemic cell infiltration		1	2	1	3
	metastasis:liver tumor		1	0	1	1
[Hematopoietic system]						
bone marrow			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	1	3	3
lymph node			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	1	4
	metastasis:liver tumor		0	0	1	0
	metastasis:lung tumor		0	0	0	1
	metastasis:spleen tumor		0	1	0	0
	metastasis:seminal vesicle tumor		0	0	0	1
spleen			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	3	3	1

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

Organ	Findings	Group Name / No. of Animals on Study	Control 10	200ppm 16	800ppm 16	3200ppm 19
[Hematopoietic system]						
spleen			<10>	<16>	<16>	<19>
	metastasis:liver tumor		1	0	0	0
[Circulatory system]						
heart			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	1	0	0
[Digestive system]						
tongue			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	1	0	0
small intes			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	0	1
large intes			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	1	0
liver			<10>	<16>	<16>	<19>
	leukemic cell infiltration		1	1	2	4
	metastasis:spleen tumor		0	1	0	0
	metastasis:salivary gland tumor		0	0	0	1
[Urinary system]						
kidney			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	2	2
	metastasis:liver tumor		0	0	1	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0190
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 on Study	Control 10	200ppm 16	800ppm 16	3200ppm 19
[Reproductive system]						
testis			<10>	<16>	<16>	<19>
	metastasis:liver tumor		0	1	0	0
epididymis			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	1	1
	metastasis:liver tumor		1	0	0	0
[Nervous system]						
brain			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	0	1
[Special sense organs/appandage]						
Harder gl			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	1	0	1
[Musculoskeletal system]						
muscle			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	1	0	0
[Body cavities]						
retroperit			<10>	<16>	<16>	<19>
	leukemic cell infiltration		0	0	1	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX N 6

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

MOUSE: FEMALE : DEAD AND MORIBUND ANIMALS

(TOW-YERA STUDY)

Organ	Findings	Group Name / No. of Animals on Study	Control 21	200ppm 20	800ppm 21	3200ppm 20
[Integumentary system/appandage]						
skin/app			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	0	1	0
brown fat			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	0	0	1
[Respiratory system]						
nasal cavit			<21>	<20>	<21>	<20>
	metastasis:uterus tumor		1	0	0	0
lung			<21>	<20>	<21>	<20>
	leukemic cell infiltration		9	3	9	2
	metastasis:uterus tumor		2	1	0	2
	metastasis:subcutis tumor		0	0	0	1
[Hematopoietic system]						
bone marrow			<21>	<20>	<21>	<20>
	leukemic cell infiltration		2	2	3	1
	metastasis:uterus tumor		1	0	3	1
lymph node			<21>	<20>	<21>	<20>
	leukemic cell infiltration		1	2	3	0
	metastasis:uterus tumor		0	1	0	1
	metastasis:lung tumor		0	1	0	0
	metastasis:spleen tumor		0	0	0	1

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

Organ	Findings	Group Name / No. of Animals on Study	Control 21	200ppm 20	800ppm 21	3200ppm 20
[Hematopoietic system]						
spleen			<21>	<20>	<21>	<20>
	leukemic cell infiltration		6	4	6	0
[Circulatory system]						
heart			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	1	0	0
	metastasis:uterus tumor		0	1	0	0
	metastasis:salivary gland tumor		0	0	0	1
[Digestive system]						
tongue			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	1	0	0
salivary gl			<21>	<20>	<21>	<20>
	leukemic cell infiltration		5	1	1	1
stomach			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	0	4	0
large intes			<21>	<20>	<21>	<20>
	metastasis:subcutis tumor		0	0	0	1
liver			<21>	<20>	<21>	<20>
	leukemic cell infiltration		6	5	8	0
	metastasis:uterus tumor		4	7	4	7
	metastasis:lung tumor		1	0	0	0
	metastasis:spleen tumor		0	0	0	1

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0190
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 on Study	Control 21	200ppm 20	800ppm 21	3200ppm 20
[Digestive system]						
liver			<21>	<20>	<21>	<20>
	metastasis:salivary gland tumor		0	0	0	1
[Urinary system]						
kidney			<21>	<20>	<21>	<20>
	leukemic cell infiltration		2	3	3	2
	metastasis:uterus tumor		0	2	0	2
urin bladd			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	0	1	0
[Reproductive system]						
ovary			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	2	2	0
	metastasis:uterus tumor		4	4	4	7
uterus			<21>	<20>	<21>	<20>
	leukemic cell infiltration		2	0	2	0
[Nervous system]						
brain			<21>	<20>	<21>	<20>
	leukemic cell infiltration		2	0	0	0
[Special sense organs/appandage]						
Harder gl			<21>	<20>	<21>	<20>
	leukemic cell infiltration		2	1	4	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0190
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 on Study	Control 21	200ppm 20	800ppm 21	3200ppm 20
[Musculoskeletal system]						
muscle			<21>	<20>	<21>	<20>
	leukemic cell infiltration		0	1	1	0
[Body cavities]						
peritoneum			<21>	<20>	<21>	<20>
	metastasis:subcutis tumor		0	0	0	1

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX N 7

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

MOUSE: MALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

STUDY NO. : 0190
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control 40	200ppm 34	800ppm 34	3200ppm 31
[Respiratory system]						
lung			<39>	<34>	<34>	<31>
	leukemic cell infiltration		3	1	0	1
	metastasis:liver tumor		2	1	1	0
[Hematopoietic system]						
bone marrow			<40>	<34>	<34>	<31>
	leukemic cell infiltration		1	0	1	0
lymph node			<40>	<34>	<34>	<31>
	leukemic cell infiltration		2	1	0	4
spleen			<40>	<34>	<34>	<31>
	leukemic cell infiltration		0	1	5	1
[Digestive system]						
salivary gl			<40>	<34>	<34>	<31>
	leukemic cell infiltration		0	1	0	1
stomach			<40>	<34>	<34>	<31>
	leukemic cell infiltration		0	1	0	0
large intes			<40>	<34>	<34>	<31>
	leukemic cell infiltration		0	0	1	0
liver			<40>	<34>	<34>	<31>
	leukemic cell infiltration		1	2	1	4
	metastasis:salivary gland tumor		0	0	0	1
[Urinary system]						
kidney			<40>	<34>	<34>	<31>
	leukemic cell infiltration		0	2	0	3

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0190
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : MALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control	200ppm	800ppm	3200ppm
			40	34	34	31
[Urinary system]						
kidney			<40>	<34>	<34>	<31>
	metastasis:salivary gland tumor		0	0	0	1
[Reproductive system]						
testis			<40>	<34>	<34>	<31>
	metastasis:liver tumor		1	0	1	0
epididymis			<40>	<34>	<34>	<31>
	leukemic cell infiltration		0	0	0	1
[Special sense organs/appandage]						
Harder gl			<40>	<34>	<34>	<31>
	leukemic cell infiltration		0	0	0	1

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX N 8

HISTOLOGICAL FINDINGS :METASTASIS OF TUMOR : SUMMARY

MOUSE: FEMALE : SACRIFICED ANIMALS

(TOW-YERA STUDY)

Organ	Findings	Group Name / No. of Animals on Study	Control 29	200ppm 28	800ppm 29	3200ppm 29
[Respiratory system]						
nasal cavit			<29>	<28>	<29>	<29>
	metastasis:uterus tumor		0	1	0	1
lung			<29>	<28>	<29>	<29>
	leukemic cell infiltration		2	4	2	3
[Hematopoietic system]						
bone marrow			<29>	<28>	<29>	<29>
	leukemic cell infiltration		2	0	1	2
	metastasis:uterus tumor		0	1	0	0
lymph node			<29>	<28>	<29>	<29>
	leukemic cell infiltration		1	2	2	3
spleen			<29>	<28>	<29>	<29>
	leukemic cell infiltration		3	3	1	3
[Digestive system]						
salivary gl			<29>	<28>	<29>	<29>
	leukemic cell infiltration		0	0	0	1
small intes			<29>	<28>	<29>	<29>
	leukemic cell infiltration		0	1	0	0
large intes			<29>	<28>	<29>	<29>
	metastasis:uterus tumor		0	1	0	0
liver			<29>	<28>	<29>	<29>
	leukemic cell infiltration		2	3	1	3
	metastasis:uterus tumor		0	3	0	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

STUDY NO. : 0190
ANIMAL : MOUSE BDF1
REPORT TYPE : A1
SEX : FEMALE

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

Organ	Findings	Group Name / No. of Animals on Study	Control 29	200ppm 28	800ppm 29	3200ppm 29
[Urinary system]						
kidney			<29>	<28>	<29>	<29>
	leukemic cell infiltration		2	1	1	2
	metastasis:uterus tumor		1	0	0	0
urin bladd			<29>	<28>	<29>	<29>
	leukemic cell infiltration		0	0	1	1
[Reproductive system]						
ovary			<29>	<28>	<29>	<29>
	metastasis:uterus tumor		2	2	0	2
[Nervous system]						
brain			<29>	<28>	<29>	<29>
	leukemic cell infiltration		0	0	0	1
	metastasis:periferal nerve tumor		0	0	1	0
[Musculoskeletal system]						
muscle			<29>	<28>	<29>	<29>
	leukemic cell infiltration		0	1	0	0

< a > a : Number of animals examined at the site
b b : Number of animals with lesion

APPENDIX O 1

IDENTITY OF 1,1,1-TRICHLOROETHANE

(TOW-YERA STUDY)

IDENTITY OF 1,1,1-TRICHLOROETHANE(TWO-YEAR STUDIES)

A. Lot no. DSQ3398

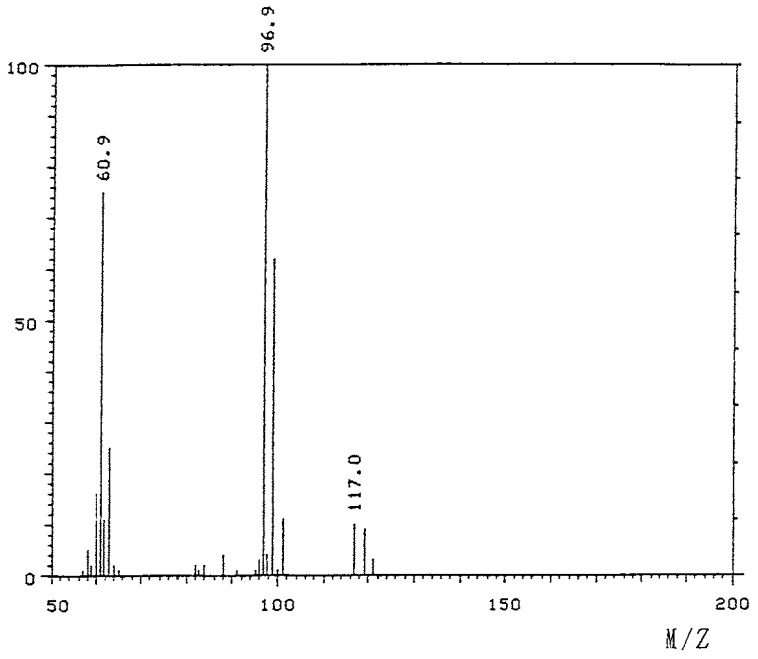
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B Mass Spectrometer

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Results: The mass spectrum was consistent with literature spectrum.

Determined Value Fragment Peak(M/Z)	Literature Values* Fragment Peak(M/Z)
60.9	61
96.9	97
117.0	117

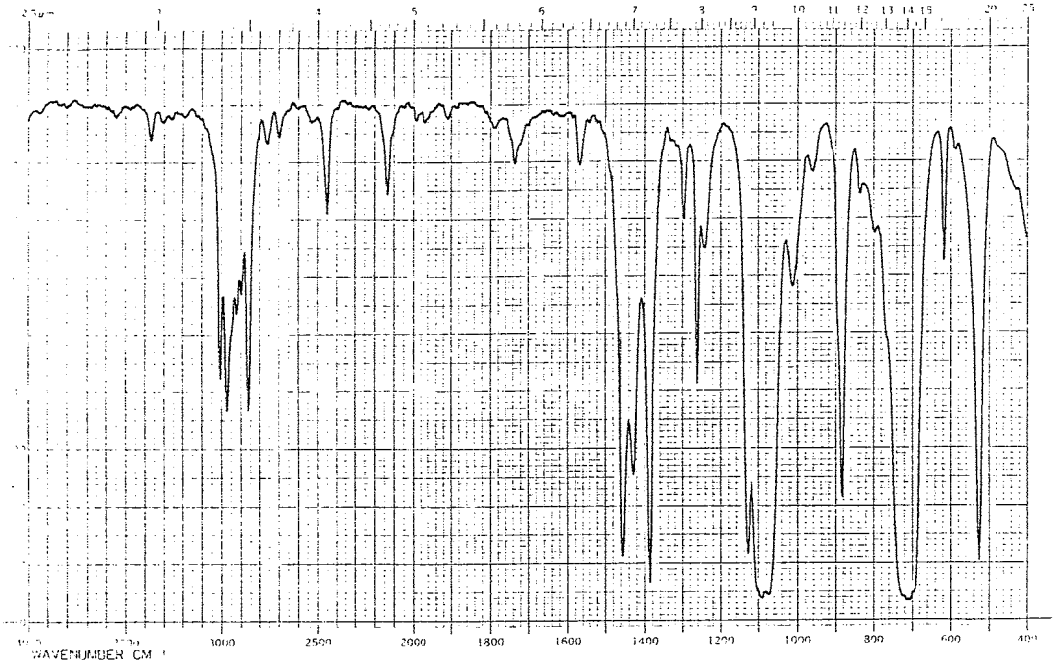
(*EPA/NIH Mass Spectral Data Base (1978) V. 1, p. 278.)

Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium



Infrared Spectrum of Test Substance

Results: The infrared spectrum was consistent with literature spectrum.

Determined Value Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
510～ 550	500～ 540
600～ 640	600～ 630
660～ 760	660～ 760
850～ 900	860～ 900
1040～1110	1040～1110
1120～1150	1110～1140
1240～1270	1240～1260
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2150
2420～2480	2400～2470
2800～2880	2800～2880
2940～3050	2940～3050

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

2. Conclusions: The result of the mass spectrum and the infrared spectrum agreed with the literature values.
Consequently, the test substance was identified as 1, 1, 1-Trichloroethane.

B. Lot no. DSN4909

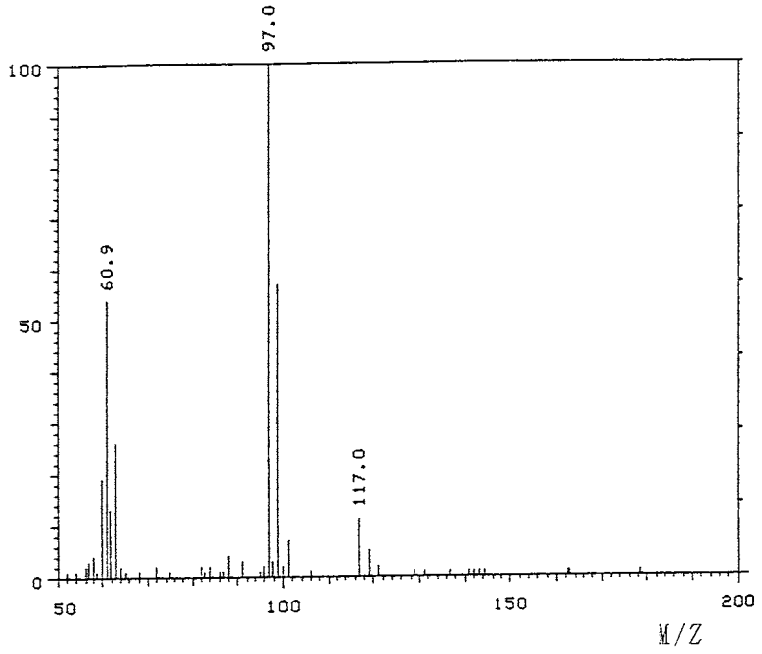
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B Mass Spectrometer

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Results: The mass spectrum was consistent with literature spectrum.

Determined Value Fragment Peak(M/Z)	Literature Values* Fragment Peak(M/Z)
60.9	61
97.0	97
117.0	117

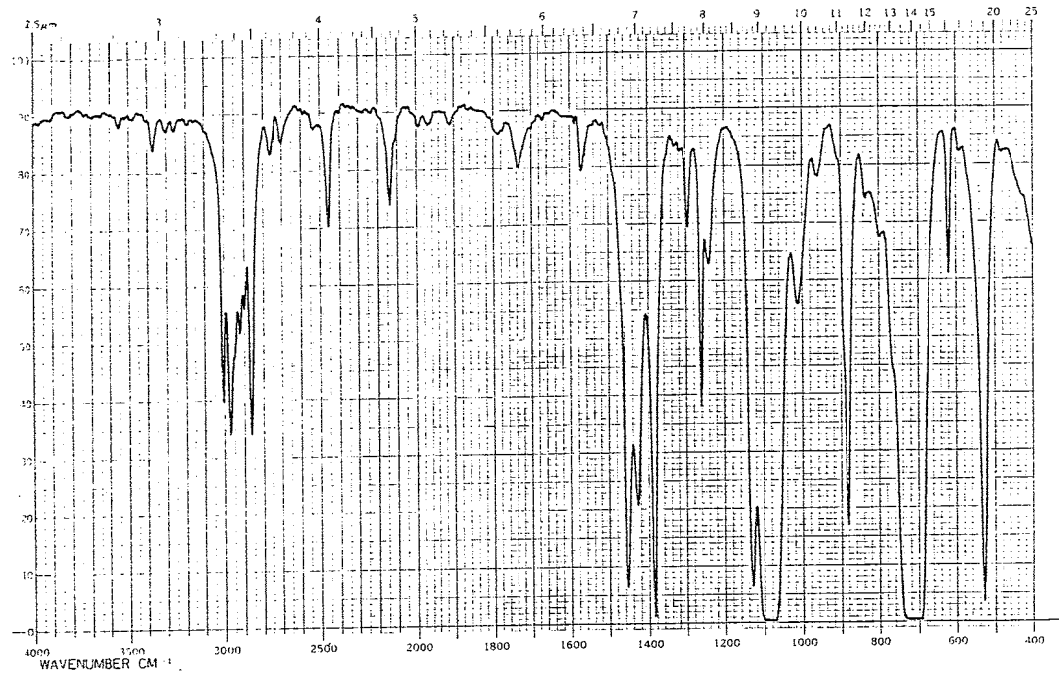
(*EPA/NIH Mass Spectral Data Base (1978) V. 1, p. 278.)

Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium



Infrared Spectrum of Test Substance

Results: The infrared spectrum was consistent with literature spectrum.

Determined Value Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
510～ 550	500～ 540
600～ 640	600～ 630
660～ 760	660～ 760
850～ 900	860～ 900
1040～1110	1040～1110
1120～1150	1110～1140
1240～1270	1240～1260
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2150
2420～2480	2400～2470
2800～2880	2800～2880
2940～3050	2940～3050

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

2. Conclusions: The result of the mass spectrum and the infrared spectrum agreed with the literature values.
Consequently, the test substance was identified as 1, 1, 1-Trichloroethane.

C. Lot no. DSE3320

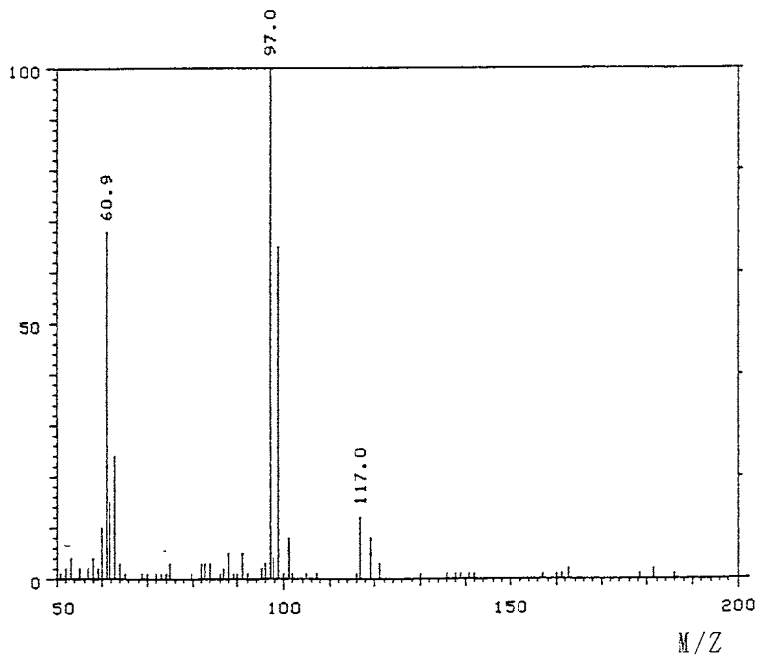
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B Mass Spectrometer

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Results: The mass spectrum was consistent with literature spectrum.

Determined Value Fragment Peak(M/Z)	Literature Values* Fragment Peak(M/Z)
60.9	61
97.0	97
117.0	117

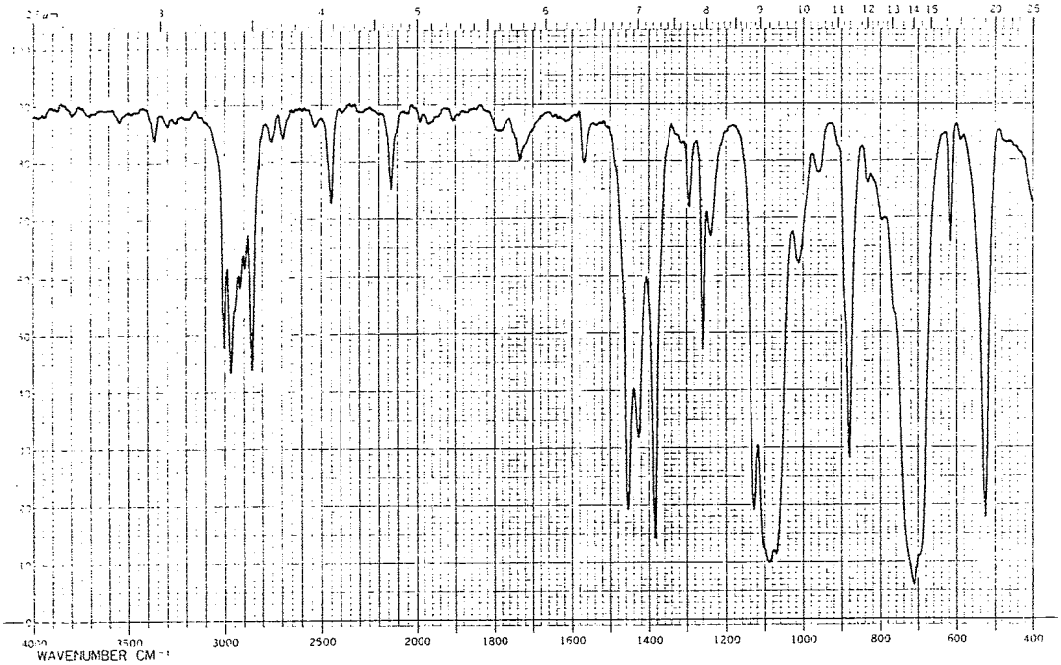
(*EPA/NIH Mass Spectral Data Base (1978) V. 1, p. 278.)

Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium



Infrared Spectrum of Test Substance

Results: The infrared spectrum was consistent with literature spectrum.

Determined Value Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
510～ 550	500～ 540
600～ 640	600～ 630
660～ 760	660～ 760
850～ 900	860～ 900
1040～1110	1040～1110
1120～1150	1110～1140
1240～1270	1240～1260
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2150
2420～2480	2400～2470
2800～2880	2800～2880
2940～3050	2940～3050

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

2. Conclusions: The result of the mass spectrum and the infrared spectrum agreed with the literature values.
Consequently, the test substance was identified as 1,1,1-Trichloroethane.

D. Lot no. TWL7670

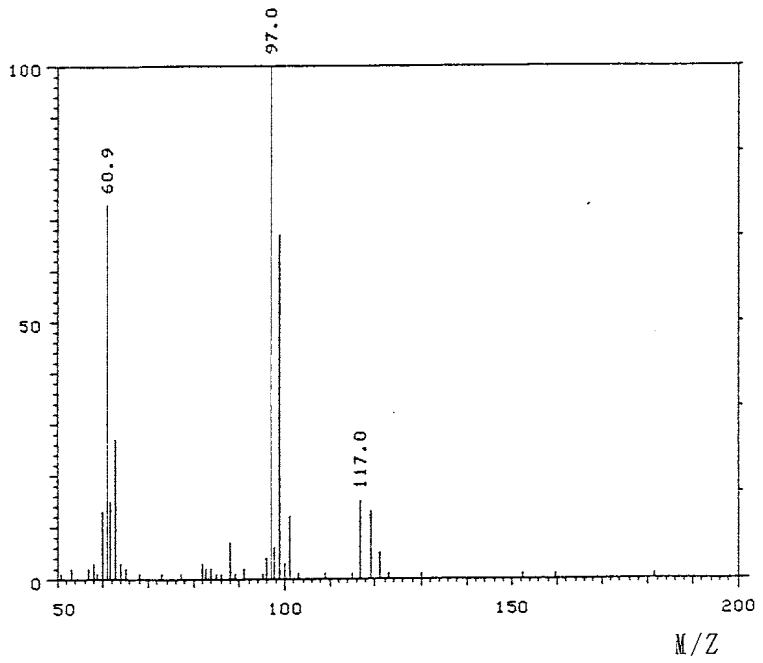
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B Mass Spectrometer

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Results: The mass spectrum was consistent with literature spectrum.

Determined Value Fragment Peak(M/Z)	Literature Values* Fragment Peak(M/Z)
60.9	61
97.0	97
117.0	117

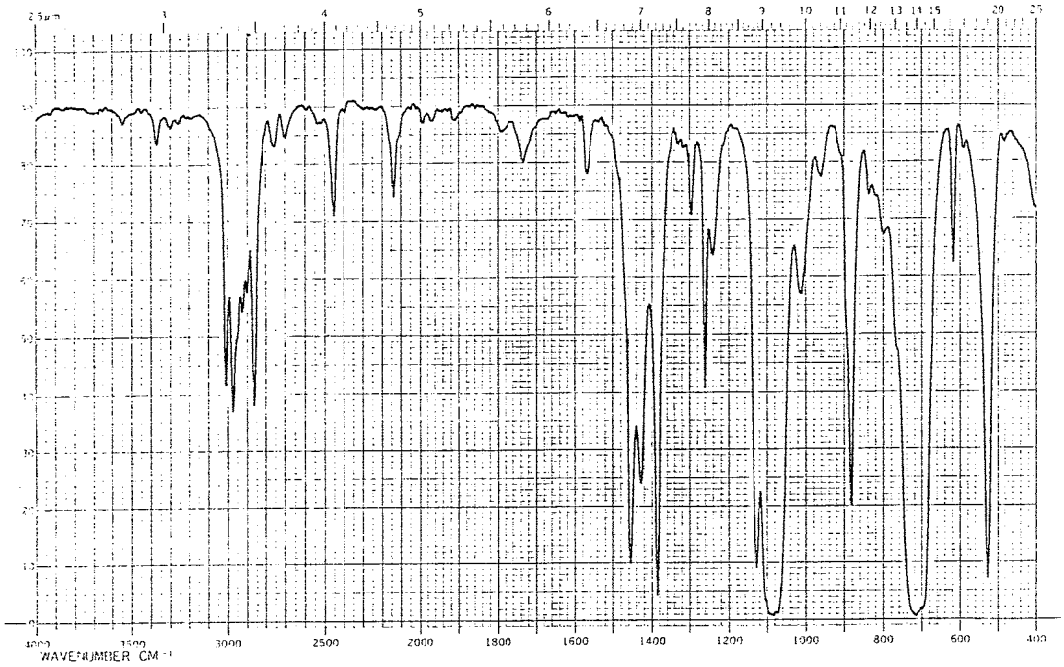
(*EPA/NIH Mass Spectral Data Base (1978) V. 1, p. 278.)

Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium



Infrared Spectrum of Test Substance

Results: The infrared spectrum was consistent with literature spectrum.

Determined Value Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
510～ 550	500～ 540
600～ 640	600～ 630
660～ 760	660～ 760
850～ 900	860～ 900
1040～1110	1040～1110
1120～1150	1110～1140
1240～1270	1240～1260
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2150
2420～2480	2400～2470
2800～2880	2800～2880
2940～3050	2940～3050

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

2. Conclusions: The result of the mass spectrum and the infrared spectrum agreed with the literature values.
Consequently, the test substance was identified as 1, 1, 1-Trichloroethane.

E. Lot no. TWE4858

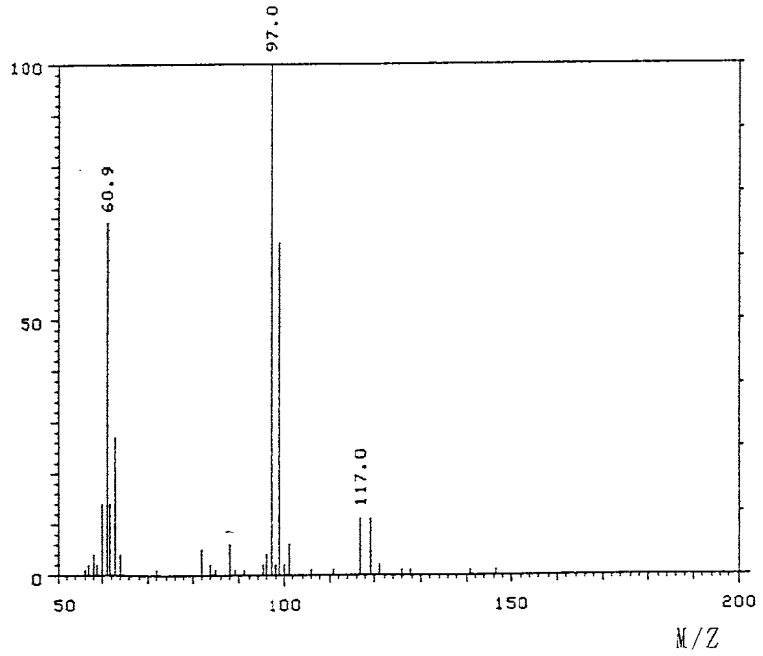
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B Mass Spectrometer

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Results: The mass spectrum was consistent with literature spectrum.

Determined Value Fragment Peak(M/Z)	Literature Values* Fragment Peak(M/Z)
60.9	61
97.0	97
117.0	117

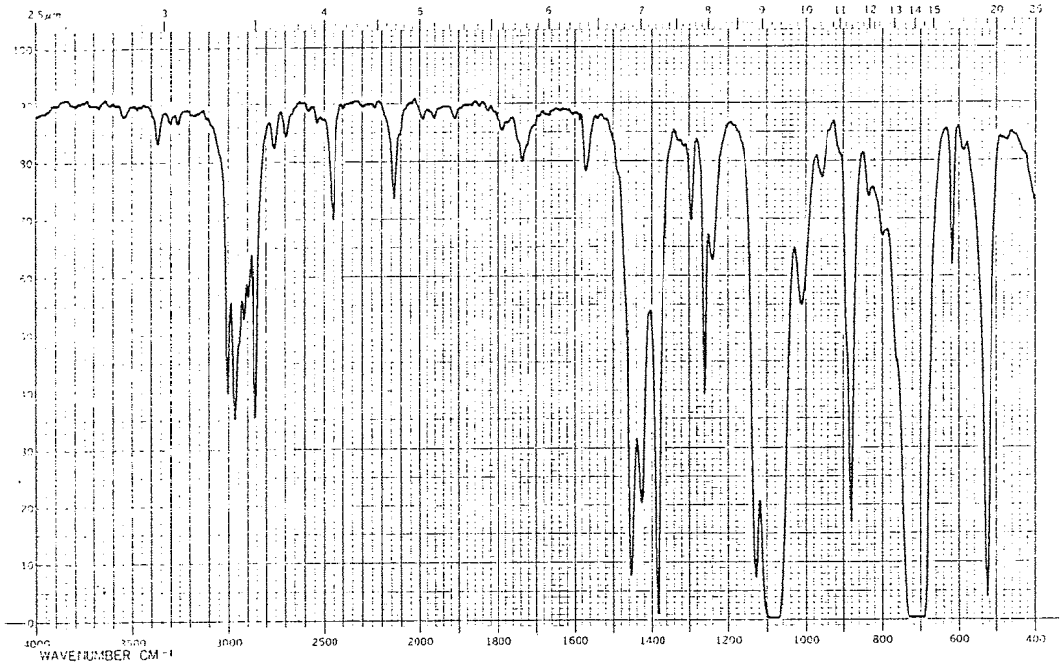
(*EPA/NIH Mass Spectral Data Base (1978) V. 1, p. 278.)

Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium



Infrared Spectrum of Test Substance

Results: The infrared spectrum was consistent with literature spectrum.

Determined Value Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
510～ 550	500～ 540
600～ 640	600～ 630
660～ 760	660～ 760
850～ 900	860～ 900
1040～1110	1040～1110
1120～1150	1110～1140
1240～1270	1240～1260
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2150
2420～2480	2400～2470
2800～2880	2800～2880
2940～3050	2940～3050

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

2. Conclusions: The result of the mass spectrum and the infrared spectrum agreed with the literature values.
Consequently, the test substance was identified as 1,1,1-Trichloroethane.

F. Lot no. APK2206

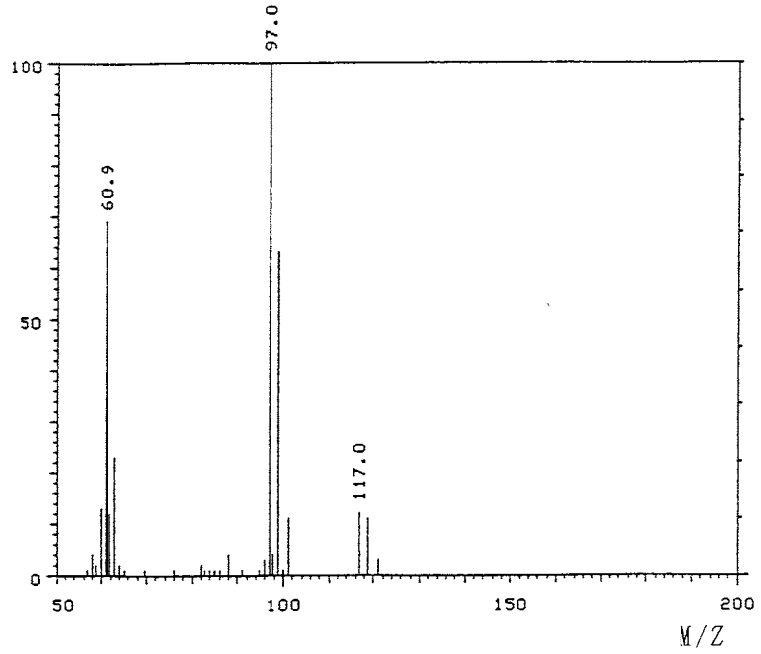
1. Spectral data

Mass Spectrometry

Instrument : Hitachi M-80B Mass Spectrometer

Ionization : EI(Electron Ionization)

Ionization Voltage : 70eV



Mass Spectrum of Test Substance

Results: The mass spectrum was consistent with literature spectrum.

Determined Value Fragment Peak(M/Z)	Literature Values* Fragment Peak(M/Z)
60.9	61
97.0	97
117.0	117

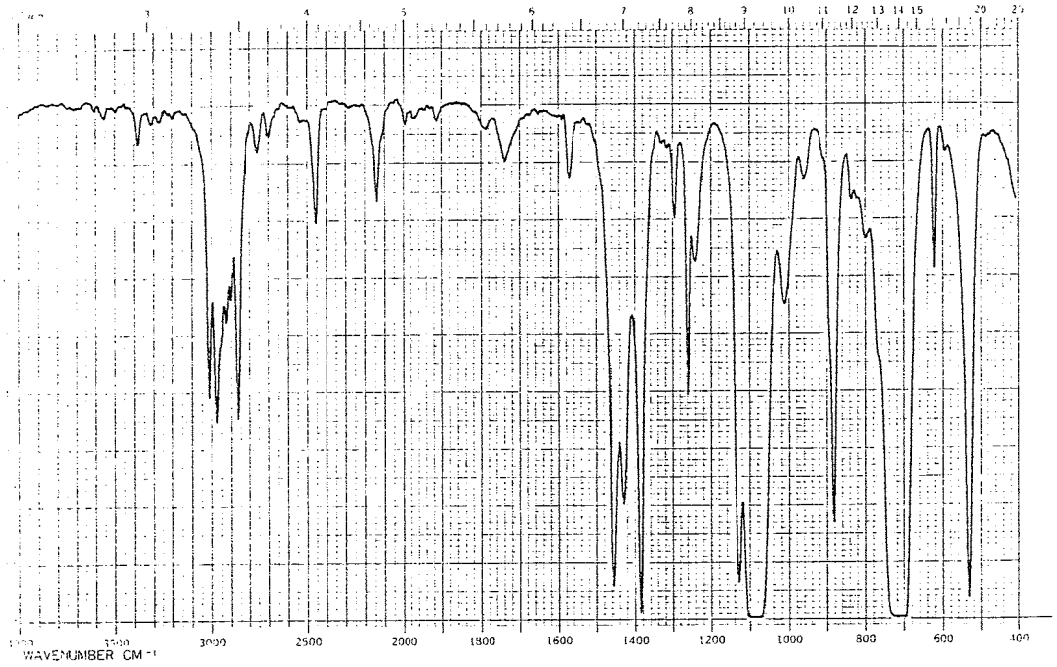
(*EPA/NIH Mass Spectral Data Base (1978) V. 1, p. 278.)

Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium



Infrared Spectrum of Test Substance

Results: The infrared spectrum was consistent with literature spectrum.

Determined Value Wave Number(cm^{-1})	Literature Values* Wave Number(cm^{-1})
510～ 550	500～ 540
600～ 640	600～ 630
660～ 760	660～ 760
850～ 900	860～ 900
1040～1110	1040～1110
1120～1150	1110～1140
1240～1270	1240～1260
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2150
2420～2480	2400～2470
2800～2880	2800～2880
2940～3050	2940～3050

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

2. Conclusions: The result of the mass spectrum and the infrared spectrum agreed with the literature values.
Consequently, the test substance was identified as 1,1,1-Trichloroethane.

APPENDIX O 2

STABILITY OF 1,1,1-TRICHLOROETHANE

(TOW-YERA STUDY)

STABILITY OF 1,1,1-TRICHLOROETHANE(TWO-YEAR STUDIES)

A. Lot no. DSQ3398

1. Sample storage: This lot was used from 1991.11.21 to 1991.12.21. Test substance was stored at room temperature.

2. Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium

Results: The result of the infrared spectrum did not change when before and after studies.

1991.11.18(date analyzed)	1991.12.24(date analyzed)
Wave Number(cm^{-1})	Wave Number(cm^{-1})
510～ 550	510～ 550
600～ 640	600～ 640
660～ 760	660～ 760
850～ 900	850～ 900
1040～1110	1040～1110
1120～1150	1120～1150
1240～1270	1240～1270
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2170
2420～2480	2420～2480
2800～2880	2800～2880
2940～3050	2940～3050

3. Gas Chromatography

Instrument: Hewlett Packard 5890A Gas Chromatograph

Column: Methyl Silicone(0.2mmϕ × 50m)

Column Temperature: 80°C

Flow Rate: 1 ml/min

Detector: FID(Flame Ionization Detector)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No.4) and four impurities(peak No.1,2,3,5 < 5% of total area) analyzed at 1991.11.18 and one major peak(peak No.4) and four impurities(peak No.1,2,3,5 < 5% of total area) analyzed at 1991.12.24. It was identified only by comparing its gas chromatograph with that of the 1,4-Dioxane(peak No.5) in the 1,1,1-Trichloroethane, the amount in the test substance was 3.48% at 1991.11.18. No new treace impurity peak in the test substance analyzed at 1991.12.24 was detected.

Date	Peak No.	Retention Time(min)	AREA COUNT
1991.11.18	1	2.388	129
(date analyzed)	2	2.455	96
	3	2.54	1161
	4	2.782	144166
	5	3.093	5741
1991.12.24	1	2.387	130
(date analyzed)	2	2.453	96
	3	2.54	1167
	4	2.78	145482
	5	3.092	5775

4. Conclusions: The results indicated that the test substance did not change when stored in the dark at room temperature during this period(for about 5 weeks).

B. Lot no. DSN4909

1. Sample storage: This lot was used from 1991.11.21 to 1991.12.21. Test substance was stored at room temperature.

2. Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium

Results: The result of the infrared spectrum did not change when before and after studies.

1991.12.16(date analyzed)	1992.03.19(date analyzed)
Wave Number(cm^{-1})	Wave Number(cm^{-1})
510～ 550	510～ 550
600～ 640	600～ 640
660～ 760	660～ 760
850～ 900	850～ 900
1040～1110	1040～1110
1120～1150	1120～1150
1240～1270	1240～1270
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2170
2420～2480	2420～2480
2800～2880	2800～2880
2940～3050	2940～3050

3. Gas Chromatography

Instrument: Hewlett Packard 5890A Gas Chromatograph

Column: Methyl Silicone(0.2mmϕ × 50m)

Column Temperature: 80°C

Flow Rate: 1 ml/min

Detector: FID(Flame Ionization Detector)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No.4) and four impurities(peak No.1,2,3,5 < 5% of total area) analyzed at 1991.12.16 and one major peak(peak No.4) and four impurities(peak No.1,2,3,5 < 5% of total area) analyzed at 1992.3.19. It was identified only by comparing its gas chromatograph with that of the 1,4-Dioxane(peak No.5) in the 1,1,1-Trichloroethane, the amount in the test substance was 3.42% at 1991.12.16. No new treace impurity peak in the test substance analyzed at 1992.3.19 was detected.

Date	Peak No.	Retention Time(min)	Area Count
1991.12.16	1	2.388	131
(date analyzed)	2	2.455	98
	3	2.542	1182
	4	2.782	146682
	5	3.093	5841
1992.03.19	1	2.388	132
(date analyzed)	2	2.455	97
	3	2.54	1180
	4	2.782	146759
	5	3.093	5839

4. Conclusions: The results indicated that the test substance did not change when stored in the dark at room temperature during this period(for about 13 weeks).

C. Lot no. DSE3320

1. Sample storage: This lot was used from 1991.11.21 to 1991.12.21. Test substance was stored at room temperature.

2. Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium

Results: The result of the infrared spectrum did not change when before and after studies.

1992.03.05(date analyzed)	1992.09.08(date analyzed)
Wave Number(cm^{-1})	Wave Number(cm^{-1})
510～ 550	510～ 550
600～ 640	600～ 640
660～ 760	660～ 760
850～ 900	850～ 900
1040～1110	1040～1110
1120～1150	1120～1150
1240～1270	1240～1270
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2170
2420～2480	2420～2480
2800～2880	2800～2880
2940～3050	2940～3050

3. Gas Chromatography

Instrument: Hewlett Packard 5890A Gas Chromatograph

Column: Methyl Silicone(0.2mmϕ × 50m)

Column Temperature: 80°C

Flow Rate: 1 ml/min

Detector: FID(Flame Ionization Detector)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No.5) and five impurities(peak No.1,2,3,4,6 < 5% of total area) analyzed at 1992.3.5 and one major peak(peak No.4) and four impurities(peak No.1,2,3,5 < 5% of total area) analyzed at 1992.9.8. It was identified only by comparing its gas chromatograph with that of the 1,4-Dioxane(peak No.6) in the 1,1,1-Trichloroethane, the amount in the test substance was 3.50% at 1992.3.5. No new treace impurity peak in the test substance analyzed at 1992.9.8 was detected.

Date	Peak No.	Retention Time(min)	AREA COUNT
1992.03.05	1	2.357	13
(date analyzed)	2	2.388	141
	3	2.455	95
	4	2.542	1119
	5	2.782	146393
	6	3.093	5720
1992.09.08	1	2.388	126
(date analyzed)	2	2.455	94
	3	2.542	1132
	4	2.782	147686
	5	3.093	5770

4. Conclusions: The results indicated that the test substance did not change when stored in the dark at room temperature during this period(for about 27 weeks).

D. Lot no. TWL7670

1. Sample storage: This lot was used from 1991.11.21 to 1991.12.21. Test substance was stored at room temperature.

2. Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium

Results: The result of the infrared spectrum did not change when before and after studies.

1992.09.03(date analyzed)	1993.03.19(date analyzed)
Wave Number(cm^{-1})	Wave Number(cm^{-1})
510～ 550	510～ 550
600～ 640	600～ 640
660～ 760	660～ 760
850～ 900	850～ 900
1040～1110	1040～1110
1120～1150	1120～1150
1240～1270	1240～1270
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2170
2420～2480	2420～2480
2800～2880	2800～2880
2940～3050	2940～3050

3. Gas Chromatography

Instrument: Hewlett Packard 5890A Gas Chromatograph

Column: Methyl Silicone(0.2mmϕ × 50m)

Column Temperature: 80°C

Flow Rate: 1 ml/min

Detector: FID(Flame Ionization Detector)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No.5) and five impurities(peak No.1,2,3,4,6 < 5% of total area) analyzed at 1992.9.3 and one major peak(peak No.4) and four impurities(peak No.1.2,3,5 < 5% of total area) analyzed at 1993.3.19. It was identified only by comparing its gas chromatograph with that of the 1,4-Dioxane(peak No.6) in the 1,1,1-Trichloroethane, the amount in the test substance was 3.36% at 1992.9.3. No new treace impurity peak in the test substance analyzed at 1993.3.19 was detected.

Date	Peak No.	Retention Time(min)	AREA COUNT
1992.09.03	1	2.353	15
(date analyzed)	2	2.388	133
	3	2.453	46
	4	2.54	1138
	5	2.782	148844
	6	3.093	5810
1993.03.19	1	2.388	114
(date analyzed)	2	2.455	53
	3	2.54	1125
	4	2.782	147947
	5	3.093	5796

4. Conclusions: The results indicated that the test substance did not change when stored in the dark at room temperature during this period(for about 28 weeks).

E. Lot no. TWE4858

1. Sample storage: This lot was used from 1991.11.21 to 1991.12.21. Test substance was stored at room temperature.

2. Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium

Results: The result of the infrared spectrum did not change when before and after studies.

1993.03.15(date analyzed)	1993.09.13(date analyzed)
Wave Number(cm^{-1})	Wave Number(cm^{-1})
510～ 550	510～ 550
600～ 640	600～ 640
660～ 760	660～ 760
850～ 900	850～ 900
1040～1110	1040～1110
1120～1150	1120～1150
1240～1270	1240～1270
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2170
2420～2480	2420～2480
2800～2880	2800～2880
2940～3050	2940～3050

3. Gas Chromatography

Instrument: Hewlett Packard 5890A Gas Chromatograph

Column: Methyl Silicone(0.2mmϕ × 50m)

Column Temperature: 80°C

Flow Rate: 1 ml/min

Detector: FID(Flame Ionization Detector)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No.5) and five impurities(peak No.1,2,3,4,6 < 5% of total area) analyzed at 1993.3.15 and one major peak(peak No.5) and five impurities(peak No.1,2,3,4,6 < 5% of total area) analyzed at 1993.9.13. It was identified only by comparing its gas chromatograph with that of the 1,4-Dioxane(peak No.6) in the 1,1,1-Trichloroethane, the amount in the test substance was 3.34% at 1993.3.15. No new treace impurity peak in the test substance analyzed at 1993.9.13 was detected.

Date	Peak No.	Retention Time(min)	AREA COUNT
1993.03.15	1	2.357	14
(date analyzed)	2	2.388	145
	3	2.45	82
	4	2.542	1169
	5	2.782	151205
	6	3.095	5849
1993.09.13	1	2.357	14
(date analyzed)	2	2.39	144
	3	2.455	81
	4	2.542	1157
	5	2.782	149811
	6	3.093	5795

4. Conclusions: The results indicated that the test substance did not change when stored in the dark at room temperature during this period(for about 26 weeks).

F. Lot no. APK2206

1. Sample storage: This lot was used from 1991.11.21 to 1991.12.21. Test substance was stored at room temperature.

2. Infrared Spectrometry

Instrument : Hitachi 270-30 Infrared Spectrometer

Cell : KBr

Slit : Medium

Results: The result of the infrared spectrum did not change when before and after studies.

1993.09.13(date analyzed)	1993.12.9(date analyzed)
Wave Number(cm^{-1})	Wave Number(cm^{-1})
510～ 550	510～ 550
600～ 640	600～ 640
660～ 760	660～ 760
850～ 900	850～ 900
1040～1110	1040～1110
1120～1150	1120～1150
1240～1270	1240～1270
1370～1400	1370～1400
1410～1440	1410～1440
1440～1480	1440～1480
2100～2170	2100～2170
2420～2480	2420～2480
2800～2880	2800～2880
2940～3050	2940～3050

3. Gas Chromatography

Instrument: Hewlett Packard 5890A Gas Chromatograph

Column: Methyl Silicone(0.2mmϕ × 50m)

Column Temperature: 80°C

Flow Rate: 1 ml/min

Detector: FID(Flame Ionization Detector)

Injection Volume: 1 μl

Results: Gas chromatography indicated one major peak(peak No.5) and five impurities(peak No.1,2,3,4,6 < 5% of total area) analyzed at 1993.9.7 and one major peak(peak No.5) and five impurities(peak No.1,2,3,4,6 < 5% of total area) analyzed at 1993.12.9. It was identified only by comparing its gas chromatograph with that of the 1,4-Dioxane(peak No.6) in the 1,1,1-Trichloroethane, the amount in the test substance was 3.41% at 1993.9.7. No new treace impurity peak in the test substance analyzed at 1993.12.9 was detected.

Date	Peak No.	Retention Time(min)	AREA COUNT
1993.09.07	1	2.357	32
(date analyzed)	2	2.388	139
	3	2.455	100
	4	2.542	1137
	5	2.782	152491
	6	3.093	5868
1993.12.09	1	2.357	34
(date analyzed)	2	2.39	136
	3	2.457	100
	4	2.542	1128
	5	2.783	151486
	6	3.095	5828

4. Conclusions: The results indicated that the test substance did not change when stored in the dark at room temperature during this period(for about 13 weeks).

APPENDIX P 1

CONDETRATION OF 1,1,1-TRICHLOROETHANE IN INHALATION CHAMBER

(TOW-YERA STUDY)

CONCENTRATION OF 1,1,1-Trichloroethane
IN INHALTION CHAMBER
(RAT : TWO-YEAR STUDY)

Group Name	Concentration (ppm) Mean ± S.D.
Control	0.0 ± 0.0
200ppm	200.4 ± 4.1
800ppm	796.6 ± 8.8
3200ppm	3181.1 ± 34.1

CONCENTRATION OF 1,1,1-Trichloroethane
IN INHALTION CHAMBER
(MOUSE : TWO-YEAR STUDY)

Group Name	Concentration (ppm) Mean ± S.D.
Control	0.0 ± 0.0
200ppm	200.6 ± 3.3
800ppm	800.6 ± 8.7
3200ppm	3204.3 ± 24.0

APPENDIX P 2

ENVIRONMET OF INHALATION CHAMBER

(TOW-YERA STUDY)

ENVIRONMENT OF INHALATION CHAMBER (RAT : TWO-YEAR STUDY)

Group Name	Temperature(℃) Mean ± S.D.	Humidity(%) Mean ± S.D.	Ventilation Rate(L/min) Mean ± S.D.	Room Air Change(time/h) Mean
Control	23.0 ± 0.3	54.2 ± 2.5	1511.2 ± 11.8 (782.0 ± 11.2)	11.9 (6.2)
200ppm	23.1 ± 0.4	53.7 ± 4.1	1508.6 ± 12.7 (775.6 ± 10.0)	11.9 (6.1)
800ppm	22.7 ± 0.3	53.5 ± 2.8	1507.5 ± 13.5 (782.2 ± 10.7)	11.9 (6.2)
3200ppm	22.9 ± 0.3	52.7 ± 3.0	1505.6 ± 12.1 (778.4 ± 9.7)	11.9 (6.1)

( ) : during exposure

ENVIRONMENT OF INHALATION CHAMBER (MOUSE : TWO-YEAR STUDY)

Group Name	Temperature(℃) Mean ± S.D.	Humidity(%) Mean ± S.D.	Ventilation Rate(L/min) Mean ± S.D.	Room Air Change(time/h) Mean
Control	22.5 ± 0.2	55.3 ± 2.4	734.4 ± 7.5 (375.4 ± 6.4)	11.9 (6.1)
200ppm	22.6 ± 0.2	53.1 ± 1.8	735.0 ± 6.8 (377.6 ± 5.2)	11.9 (6.1)
800ppm	22.5 ± 0.2	54.9 ± 2.4	736.1 ± 8.0 (379.3 ± 5.8)	11.9 (6.2)
3200ppm	22.8 ± 0.2	53.6 ± 2.0	725.0 ± 8.5 (385.1 ± 16.1)	11.8 (6.2)

( ) : during exposure

APPENDIX Q 1

METHODS FOR HEMATOLOGY, BIOCHEMISTRY AND URINALYSIS

METHODS FOR HEMATOLOGY,BIOCHEMISTRY AND URINALYSIS

Item	Method
Hematology	
Red blood cell (RBC)	Light scattering method [1]
Hemoglobin (Hgb)	Cyanmethemoglobin method [1]
Hematocrit (Hct)	Calculated as RBC×MCV/10 [1]
Mean corpuscular volume (MCV)	Light scattering method [1]
Mean corpuscular hemoglobin (MCH)	Calculated as Hgb/RBC×10 [1]
Mean corpuscular hemoglobin concentration (MCHC)	Calculated as Hgb/Hct×100 [1]
Platelet	Light scattering method [1]
White blood cell (WBC)	Light scattering method [1]
Differential WBC	Pattern recognition method [2] (May-Grunwald-Giemsa staining)
Biochemistry	
Total protein (TP)	Biuret method [3]
Albumin (Alb)	BCG method [3]
A/G ratio	Calculated as Alb/(TP-Alb) [3]
T-bilirubin	Michaelson method [3]
Glucose	Enzymatic method (HK·G-6-PDH) [3]
T-cholesterol	Enzymatic method (CEH·COD·POD) [3]
Triglyceride	Enzymatic method (GK·GPO·POD) [3]
Phospholipid	Enzymatic method (PLD·COD·POD) [3]
Glutamic oxaloacetic transaminase (GOT)	UV·Rate method [3]
Glutamic pyruvic transaminase (GPT)	UV·Rate method [3]
Lactate dehydrogenase (LDH)	UV·Rate method [3]
Alkaline phosphatase (ALP)	p-Nitrophenylphosphate method [3]
γ-Glutamyl transpeptidase (γ-GTP)	L-γ-Glutamyl-p-nitroanilide method [3]
Creatine phosphokinase (CPK)	UV·Rate method [3]
Urea nitrogen	Enzymatic method (Urease·GLDH) [3]
Creatinine	Jaffe method [3]
Sodium	Flame photometry [4]
Potassium	Flame photometry [4]
Chloride	Coulometric titration [4]
Calcium	OCPC method [3]
Inorganic phosphorus	Enzymatic method (SPL·PGM·G-6-PDH) [3]
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 Q 2

UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

UNITS AND DECIMAL PLACE FOR HEMATOLOGY AND BIOCHEMISTRY

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