

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

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

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

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

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

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

(HPT070)

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APPENDIX N 3

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

MOUSE : MALE

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

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

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

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

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

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

(HPT070)

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APPENDIX N 4

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

MOUSE : FEMALE

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

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

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

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

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

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

(HPT070)

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APPENDIX O 1

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

RAT:MALE

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

NO. (%) : Number of Tumor - Bearing Animals (% of Examined Animals)

(Initial - Final) : Dead or Sacrificed Week of Tumor Bearing Animals

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

APPENDIX O 2

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

RAT : FEMALE

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control	50 ppm	200 ppm	500 ppm
			NO. (%) (Initial - Final)	NO. (%) (Initial - Final)	NO. (%) (Initial - Final)	NO. (%) (Initial - Final)
[Integumentary system/appandage]						
skin/app	papilloma		0	0	0	1 (2) (91W)
subcutis	fibroma		0	0	2 (4) (105W)	2 (4) (93 - 105W)
	schwannoma		0	1 (2) (70W)	0	0
	sarcoma:NOS		0	1 (2) (105W)	0	0
[Respiratory system]						
nasal cavit	papilloma		0	0	0	1 (2) (105W)
lung	bronchiolar-alveolar adenoma		2 (4) (105W)	0	0	0
	bronchiolar-alveolar carcinoma		0	0	1 (2) (105W)	0
[Hematopoietic system]						
spleen	hamartoma		0	0	0	1 (2) (102W)
	mononuclear cell leukemia		10 (20) (100 - 105W)	17 (34) (66 - 105W)	16 (32) (74 - 105W)	19 (38) (70 - 105W)
	hemangioendothelioma		1 (2) (81W)	0	0	0

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

PAGE : 7

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

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

STUDY NO. : 0104
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 REPORT TYPE : A1
 SEX : FEMALE

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

APPENDIX O 3

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

MOUSE : MALE

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

Organ	Findings	Group Name	Control	10 ppm	50 ppm	250 ppm
			NO. (%) (Initial - Final)	NO. (%) (Initial - Final)	NO. (%) (Initial - Final)	NO. (%) (Initial - Final)
[Integumentary system/appandage]						
subcutis	hemangioendothelioma:benign		1 (2) (97W)	0	1 (2) (82W)	0
	histiocytic sarcoma		0	0	0	1 (2) (85W)
	mastcytoma:malignant		0	0	1 (2) (105W)	0
brown fat	hemangioendothelioma		0	0	0	1 (2) (105W)
[Respiratory system]						
lung	bronchiolar-alveolar adenoma		9 (18) (104 - 105W)	7 (14) (105W)	5 (10) (94 - 105W)	4 (8) (82 - 105W)
	bronchiolar-alveolar carcinoma		2 (4) (102 - 105W)	3 (6) (101 - 105W)	3 (6) (82 - 105W)	0
[Hematopoietic system]						
lymph node	malignant lymphoma		9 (18) (77 - 105W)	7 (14) (39 - 105W)	7 (14) (76 - 105W)	9 (18) (86 - 105W)
	mastcytoma:malignant		0	1 (2) (105W)	0	2 (4) (89 - 105W)
spleen	hemangioendothelioma:benign		1 (2) (105W)	1 (2) (105W)	0	1 (2) (99W)
	malignant lymphoma		1 (2) (105W)	0	0	0

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

PAGE : 2

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

NO. (%):Number of Tumor - Bearing Animals (% of Examined Animals)

(Initial - Final):Dead or Sacrificed Week of Tumor Bearing Animals

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

APPENDIX O 4

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

MOUSE : FEMALE

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

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

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

PAGE : 6

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

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

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

NEOPLASTIC LESIONS - INCIDENCE AND TIME OF TUMOR OCCURRENCE

PAGE : 7

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

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

APPENDIX P 1

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANALYSIS

RAT: MALE

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

PAGE : 6

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

(HPT360A)

BA1S2

- (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
 Combind analysis : Death analysis + Incidental tumor test
 (e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
 ? : The conditional probabilities of the largest and smallest possible outcomes can not be estimated or this P-value is beyond the estimated P-value

APPENDIX P 2

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANALYSIS

RAT: FEMALE

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

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

(HPT360A)

BAIS2

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

APPENDIX P 3

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANALYSIS

MOUSE : MALE

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS--INCIDENCE AND STATISTICAL ANALYSIS

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

(HPT360A)

BAIS2

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

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

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

(IPT360)

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
 Combine analysis : Death analysis + Incidental tumor test
 (e): The Cochran-Armitage and Fisher's exact test compare directly the overall incidence rates.
 ? : The conditional probabilities of the largest and smallest possible outcomes can not be estimated or this P-value is beyond the estimated P-value

APPENDIX P 4

NEOPLASTIC LESIONS - INCIDENCE AND STATISTICAL ANALYSIS

MOUSE: FEMALE

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

PAGE : 7

Group Name	Control	10 ppm	50 ppm	250 ppm
SITE : Liver				
TUMOR : hepatocellular adenoma, hepatocellular carcinoma				
Overall Rates(a)	3/50(6.0)	3/47(6.4)	7/49(14.3)	33/49(67.3)
Adjusted Rates(b)	9.38	11.11	30.43	69.70
Terminal Rates(c)	3/32(9.4)	3/27(11.1)	6/22(27.3)	10/17(58.8)
Standard Rates(d)	P < 0.0001**?			
Prevalence Rates(d)	P < 0.0001**?			
Combine analysis(d)	P < 0.0001**?			
Cochran-Armitage Test(e)	P < 0.0001**			
Fisher Exact Test(e)		P = 0.3673	P = 0.1835	P < 0.0001**
SITE : pituitary gland				
TUMOR : adenoma				
Overall Rates(a)	9/49(18.4)	11/47(23.4)	4/48(8.3)	9/50(18.0)
Adjusted Rates(b)	23.08	31.03	13.64	27.78
Terminal Rates(c)	7/32(21.9)	8/27(29.6)	3/22(13.6)	4/17(23.5)
Standard Rates(d)	P = 0.0154*			
Prevalence Rates(d)	P = 0.6810			
Combine analysis(d)	P = 0.2327			
Cochran-Armitage Test(e)	P = 0.9190			
Fisher Exact Test(e)		P = 0.4032	P = 0.1655	P = 0.3839
SITE : uterus				
TUMOR : histiocytic sarcoma				
Overall Rates(a)	11/50(22.0)	12/47(25.5)	10/49(20.4)	11/50(22.0)
Adjusted Rates(b)	9.38	14.81	8.00	11.76
Terminal Rates(c)	3/32(9.4)	4/27(14.8)	1/22(4.5)	2/17(11.8)
Standard Rates(d)	P = 0.3283			
Prevalence Rates(d)	P = 0.5439			
Combine analysis(d)	P = 0.3747			
Cochran-Armitage Test(e)	P = 0.8778			
Fisher Exact Test(e)		P = 0.4643	P = 0.4662	P = 0.4072

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

NEOPLASTIC LESIONS-INCIDENCE AND STATISTICAL ANALYSIS

PAGE : 8

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

(HPT360A)

BA1S2

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

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

NEOPLASTIC LESIONS—INCIDENCE AND STATISTICAL ANALYSIS

Group Name	Control	10 ppm	50 ppm	250 ppm
SITE : ALL SITE TUMOR : maligant lymphoma				
Overall Rates(a)	17/50(34.0)	11/47(23.4)	21/49(42.9)	13/50(26.0)
Adjusted Rates(b)	31.43	25.93	36.36	23.53
Terminal Rates(c)	10/32(31.3)	7/27(25.9)	8/22(36.4)	4/17(23.5)
Standard Rates(d)	P = 0.1222			
Prevalence Rates(d)	P = 0.7122			
Combind analysis(d)	P = 0.2719			
Cochran-Armitage Test(e)	P = 0.4812			
Fisher Exact Test(e)		P = 0.2613	P = 0.3399	P = 0.3333

SITE : ALL SITE TUMOR : hemangioendothelioma				
Overall Rates(a)	1/50(2.0)	0/47(0.0)	2/49(4.1)	3/50(6.0)
Adjusted Rates(b)	3.13	0.0	9.09	5.88
Terminal Rates(c)	1/32(3.1)	0/27(0.0)	2/22(9.1)	1/17(5.9)
Standard Rates(d)	P = 0.0092**?			
Prevalence Rates(d)	P = 0.2357			
Combind analysis(d)	P = 0.0286*			
Cochran-Armitage Test(e)	P = 0.1244			
Fisher Exact Test(e)		P = 0.4796	P = 0.5000	P = 0.3235

(HPT360)

BA1S2

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

APPENDIX Q 1

IDENTITY AND PURITY OF TETRACHLOROETHYLENE

PERFORMED AT THE JAPAN BIOASSAY LABORATORY

(TWO-YEAR STUDIES)

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

A.Lot no.PDL5382

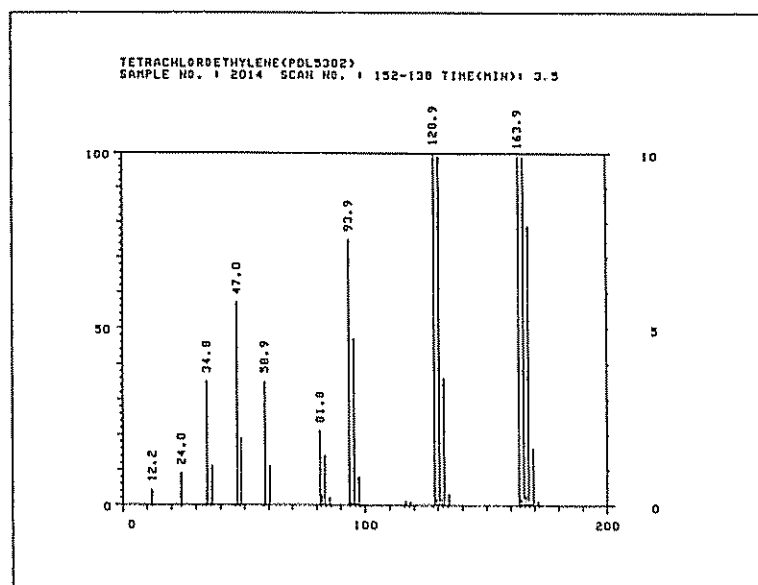
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

Molecule Weight

Theory

165.8(JAPAN PHARMACOPOEIA X I)

163.9(Calculated without isotope)

Determined

Test Substance

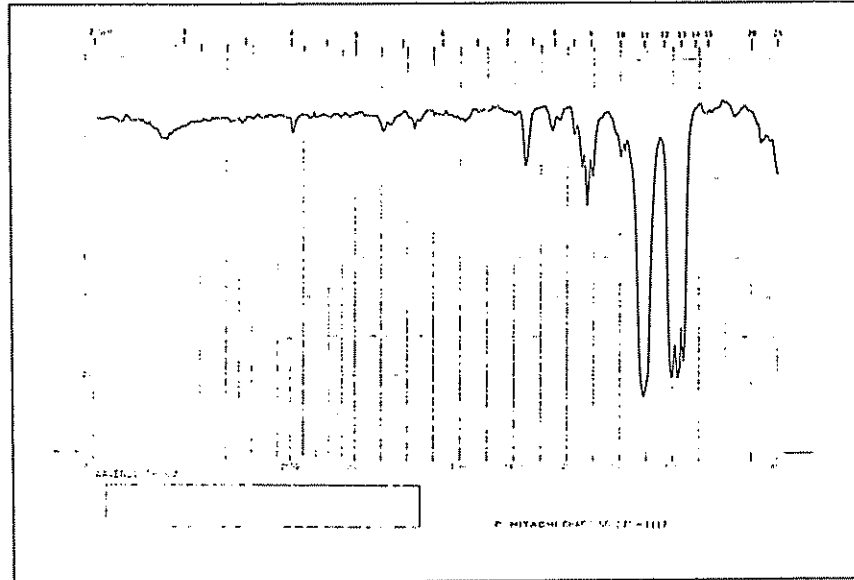
163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

	<u>Determined</u>	<u>Literature Values</u>
Results:	Wave Number (CM ⁻¹)	
	Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES, LTD.)
	750~ 820	750~ 820
	860~ 950	860~ 950
	1080~1180	1080~1180
	1240~1280	1240~1280
	1340~1380	1340~1380
	1860~1920	1860~1920
	2450~2500	2450~2500

2. Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

B.Lot no.PDJ5835

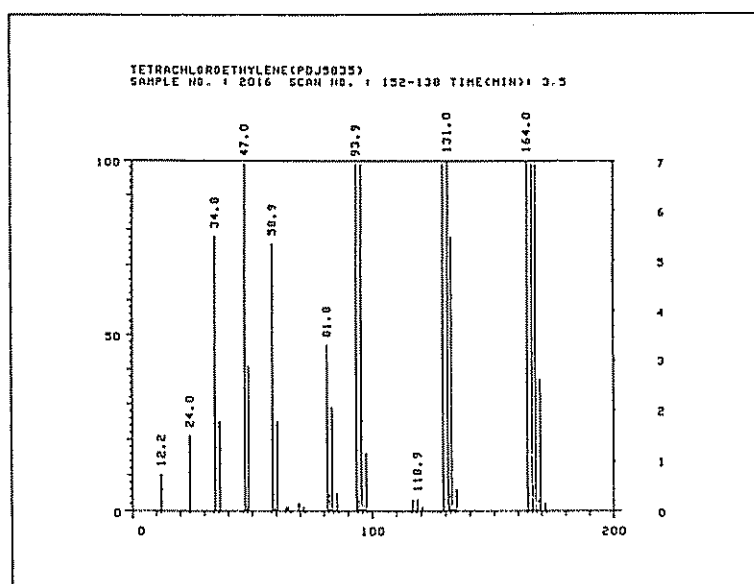
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

Molecule Weight

Theory

165.8(JAPAN PHARMACOPOEIA X I)

163.9(Calculated without isotope)

Determined

Test Substance

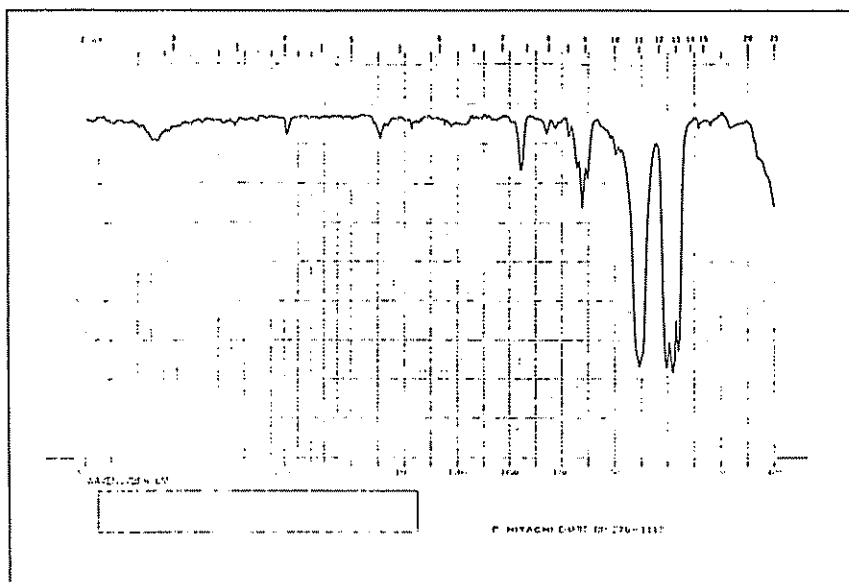
164.0

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

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

2. Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

C.Lot no.CTQ5124

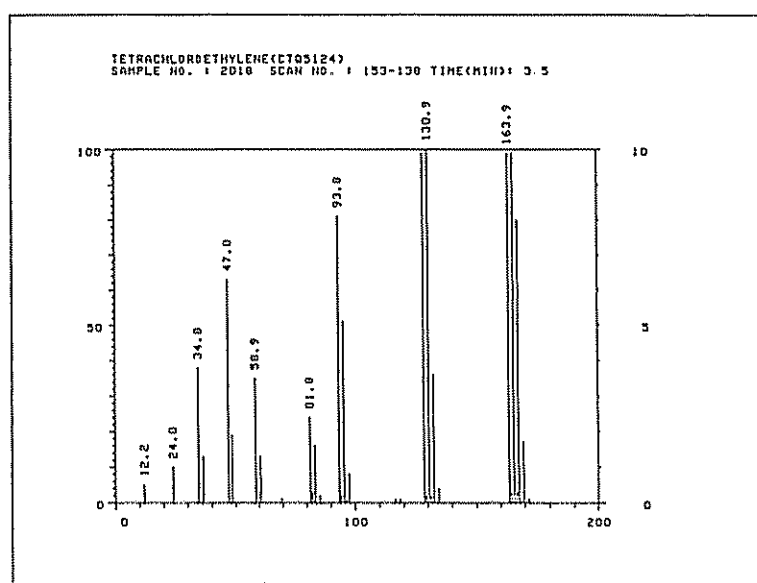
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

Molecule Weight

Theory

165.8(JAPAN PHARMACOPOEIA X I)

163.9(Calculated without isotope)

Determined

Test Substance

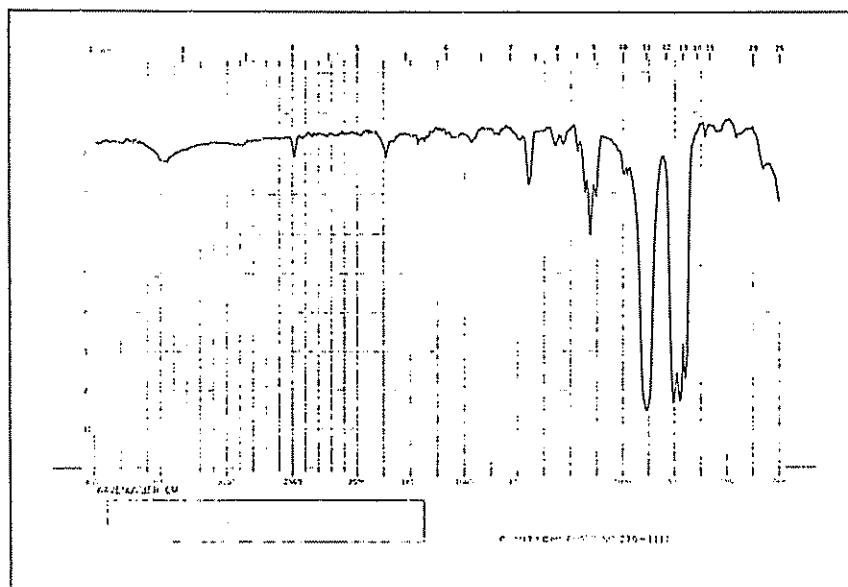
163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

	<u>Determined</u>	<u>Literature Values</u>
Results:	Wave Number (CM ⁻¹)	
	Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES, LTD.)
	750 ~ 820	750 ~ 820
	860 ~ 950	860 ~ 950
	1080 ~ 1180	1080 ~ 1180
	1240 ~ 1280	1240 ~ 1280
	1340 ~ 1380	1340 ~ 1380
	1860 ~ 1920	1860 ~ 1920
	2450 ~ 2500	2450 ~ 2500

2. Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

D.Lot no.CTN5675

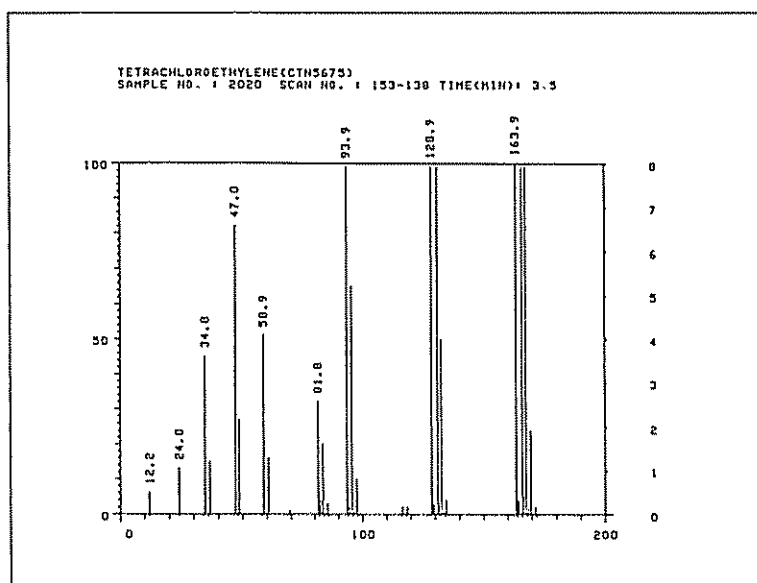
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

Molecule Weight

Theory

165.8(JAPAN PHARMACOPOEIA X I)

163.9(Calculated without isotope)

Determined

Test Substance

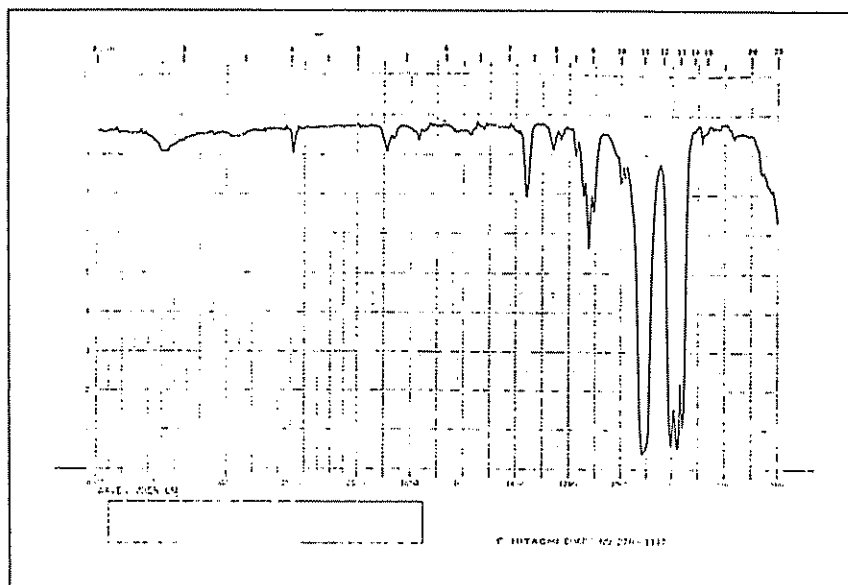
163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

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

2. Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

E.Lot no.CTJ4392

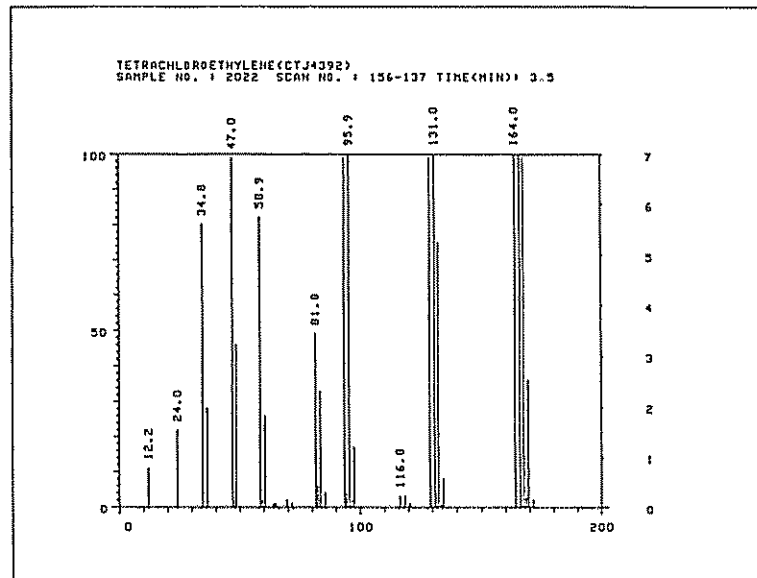
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

Molecule Weight

Theory

165.8(JAPAN PHARMACOPOEIA X I)

163.9(Calculated without isotope)

Determined

Test Substance

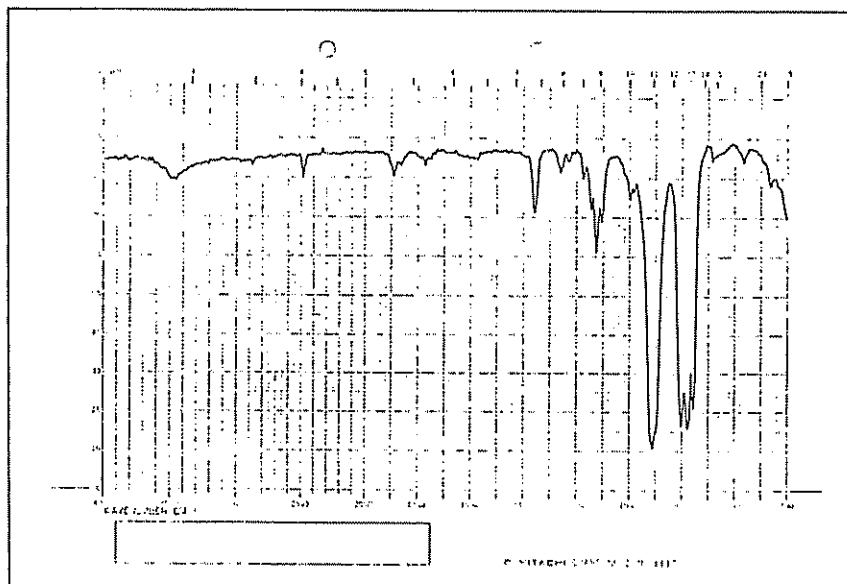
164.0

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

	<u>Determined</u>	<u>Literature Values</u>
Results:	Wave Number (CM ⁻¹)	
	Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES, LTD.)
	750~ 820	750~ 820
	860~ 950	860~ 950
	1080~1180	1080~1180
	1240~1280	1240~1280
	1340~1380	1340~1380
	1860~1920	1860~1920
	2450~2500	2450~2500

2. Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

F.Lot no.CTF5106

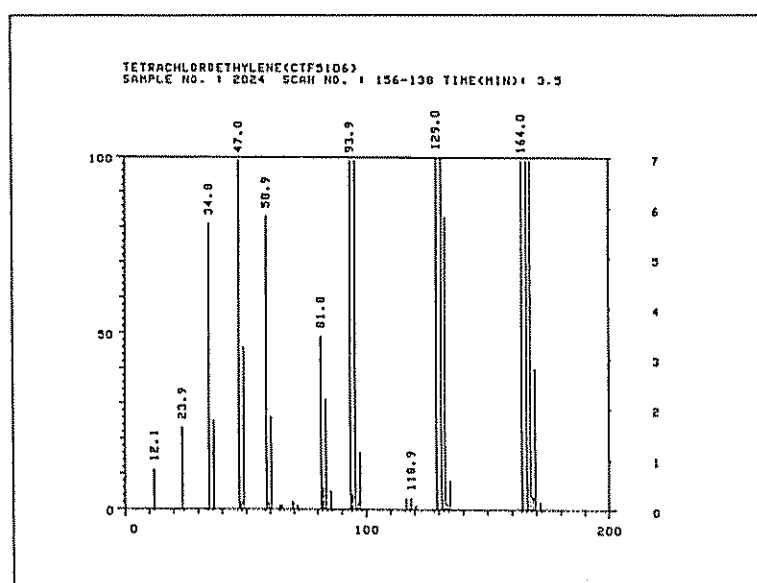
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

Molecule Weight

Theory

165.8(JAPAN PHARMACOPOEIA X I)

163.9(Calculated without isotope)

Determined

Test Substance

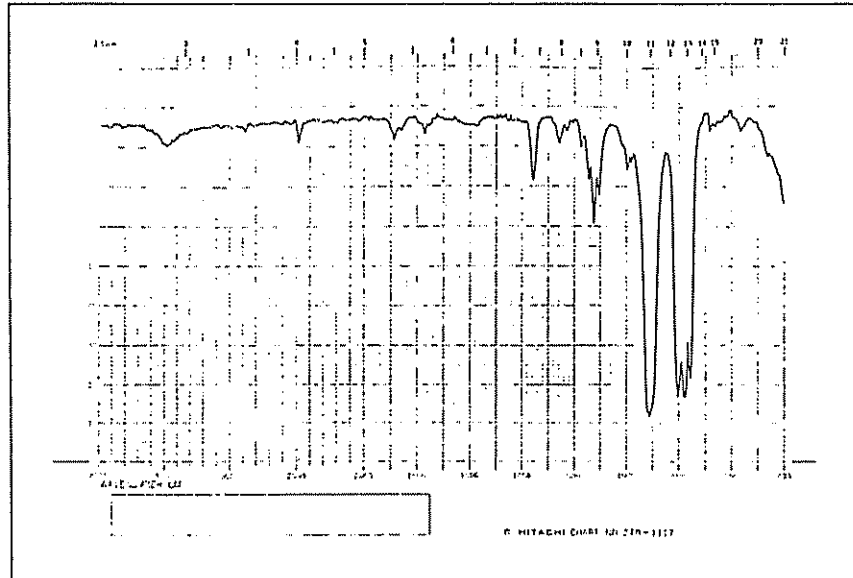
164.0

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

	<u>Determined</u>	<u>Literature Values</u>
Results:	Wave Number (CM ⁻¹)	
	Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES, LTD.)
	750~ 820	750~ 820
	860~ 950	860~ 950
	1080~1180	1080~1180
	1240~1280	1240~1280
	1340~1380	1340~1380
	1860~1920	1860~1920
	2450~2500	2450~2500

2. Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

G.Lot no.SAN5885

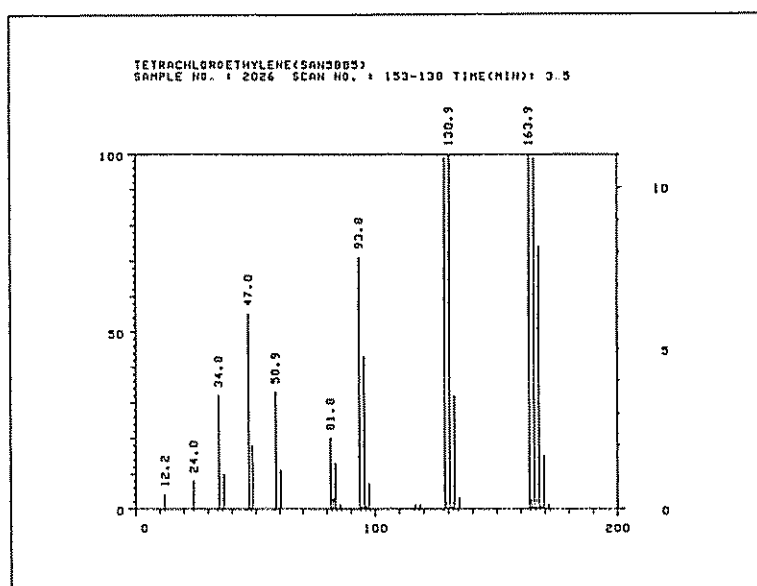
1. Spectral data

Mass Spectrometry

Instrument: Hitachi M-80B

Ionization: EI(Electron Ionization)

Ionization Voltage: 70eV



Mass Spectrum of TETRACHLOROETHYLENE

Result:

Molecule Weight

Theory

165.8(JAPAN PHARMACOPOEIA X I)

163.9(Calculated without isotope)

Determined

Test Substance

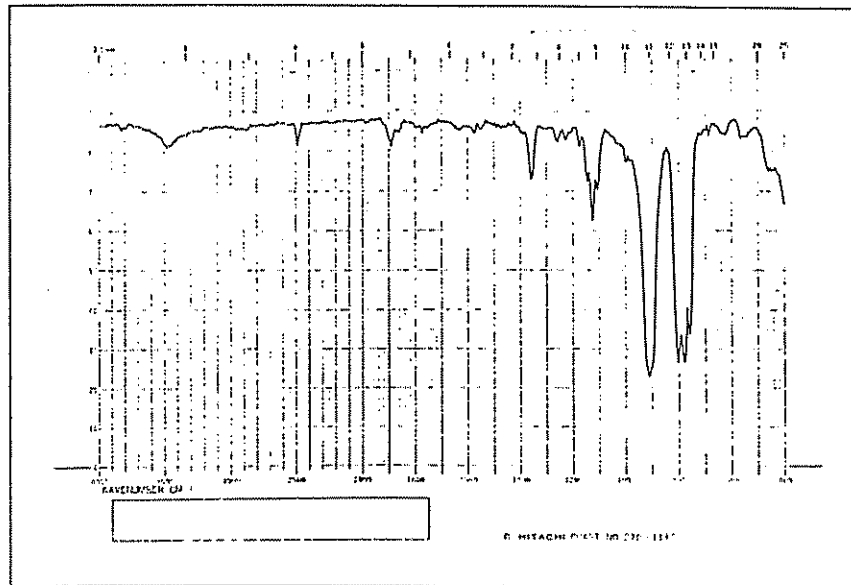
163.9

Infrared

Instrument: Hitachi 270-30

Cell: Fixed Thickness Cell(NaCl)

Slit: Medium



Infrared Spectrum of TETRACHLOROETHYLENE

	<u>Determined</u>	<u>Literature Values</u>
Results:	Wave Number (CM ⁻¹)	
	Test Substance	Substance (Performed by the WAKO PURE CHEMICAL INDUSTRIES,LTD.)
	750~ 820	750~ 820
	860~ 950	860~ 950
	1080~1180	1080~1180
	1240~1280	1240~1280
	1340~1380	1340~1380
	1860~1920	1860~1920
	2450~2500	2450~2500

Results: Major peak and two impurities

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

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

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

APPENDIX Q 2

STABILITY OF TETRACHLOROETHYLENE AT THE JAPAN BIOASSAY LABORATORY

(TWO-YEAR STUDIES)

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

A.Lot no.PDL5382

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

	<u>Previous determined of test</u> (07/14/88)	<u>After determined of test</u> (11/22/88)
--	--	---

2.Spectral data

Infrared

Instrument:	Hitachi 270-30
Cell:	Fixed thickness Cell(NaCl)
Slit:	Medium

Results:

Wave Number
(CM⁻¹)

750~ 820	750~ 820
860~ 950	860~ 950
1080~1180	1080~1180
1240~1280	1240~1280
1340~1380	1340~1380
1860~1920	1860~1920
2450~2500	2450~2500

3.Gas Chromatography

Instrument:	Hewlett Packard 5890A
Column:	Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature:	180°C
Flow Rate:	1ml/min
Detector:	FID(Hydrogen Flame Ionization)
Injection Volume:	1 μ l

Results: Major peak and two impurities

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

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

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

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

B.Lot no.PDJ5835

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

<u>Previous determined of test</u> (10/05/88)	<u>After determined of test</u> (03/09/89)
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2.Spectral data

Infrared

Instrument: Hitachi 270-30
Cell: Fixed thickness Cell(NaCl)
Slit: Medium

Results:

Wave Number
(CM⁻¹)

750~ 820	750~ 820
860~ 950	860~ 950
1080~1180	1080~1180
1240~1280	1240~1280
1340~1380	1340~1380
1860~1920	1860~1920
2450~2500	2450~2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

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

C.Lot no.CTQ5124

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

<u>Previous determined of test</u> (02/15/89)	<u>After determined of test</u> (06/23/89)
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2.Spectral data

Infrared

Instrument: Hitachi 270-30
Cell: Fixed thickness Cell(NaCl)
Slit: Medium

Results:

Wave Number
(CM^{-1})

750~ 820	750~ 820
860~ 950	860~ 950
1080~1180	1080~1180
1240~1280	1240~1280
1340~1380	1340~1380
1860~1920	1860~1920
2450~2500	2450~2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

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

D.Lot no.CTN5675

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

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

2.Spectral data

Infrared

Instrument: Hitachi 270-30
Cell: Fixed thickness Cell(NaCl)
Slit: Medium

Results:

Wave Number
(CM^{-1})

750~ 820	750~ 820
860~ 950	860~ 950
1080~1180	1080~1180
1240~1280	1240~1280
1340~1380	1340~1380
1860~1920	1860~1920
2450~2500	2450~2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

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

E.Lot no.CTJ4392

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

<u>Previous determined of test</u> (09/28/89)	<u>After determined of test</u> (01/22/90)
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2.Spectral data

Infrared

Instrument: Hitachi 270-30
Cell: Fixed thickness Cell(NaCl)
Slit: Medium

Results:

Wave Number
(CM⁻¹)

750~ 820	750~ 820
860~ 950	860~ 950
1080~1180	1080~1180
1240~1280	1240~1280
1340~1380	1340~1380
1860~1920	1860~1920
2450~2500	2450~2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

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

F.Lot no.CTF5106

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

<u>Previous determined of test</u> (01/09/90)	<u>After determined of test</u> (05/14/90)
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2.Spectral data

Infrared

Instrument: Hitachi 270-30
Cell: Fixed thickness Cell(NaCl)
Slit: Medium

Results:

Wave Number
(CM^{-1})

750~ 820	750~ 820
860~ 950	860~ 950
1080~1180	1080~1180
1240~1280	1240~1280
1340~1380	1340~1380
1860~1920	1860~1920
2450~2500	2450~2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

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

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

G.Lot no.SAN5885

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

<u>Previous determined of test</u> (04/20/90)	<u>After determined of test</u> (09/04/90)
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2.Spectral data

Infrared

Instrument: Hitachi 270-30
Cell: Fixed thickness Cell(NaCl)
Slit: Medium

Results:

Wave Number
(CM⁻¹)

750~ 820	750~ 820
860~ 950	860~ 950
1080~1180	1080~1180
1240~1280	1240~1280
1340~1380	1340~1380
1860~1920	1860~1920
2450~2500	2450~2500

3.Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

2. Gas Chromatography

Instrument: Hewlett Packard 5890A
Column: Methyl Silicone(0.2mm ϕ \times 50m)
Column Temperature: 180°C
Flow Rate: 1ml/min
Detector: FID(Hydrogen Flame Ionization)
Injection Volume: 1 μ l

Results: Major peak and two impurities

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

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

APPENDIX R 1

CONCENTRATION OF TETRACHLOROETHYLENE IN INHALATION CHAMBER

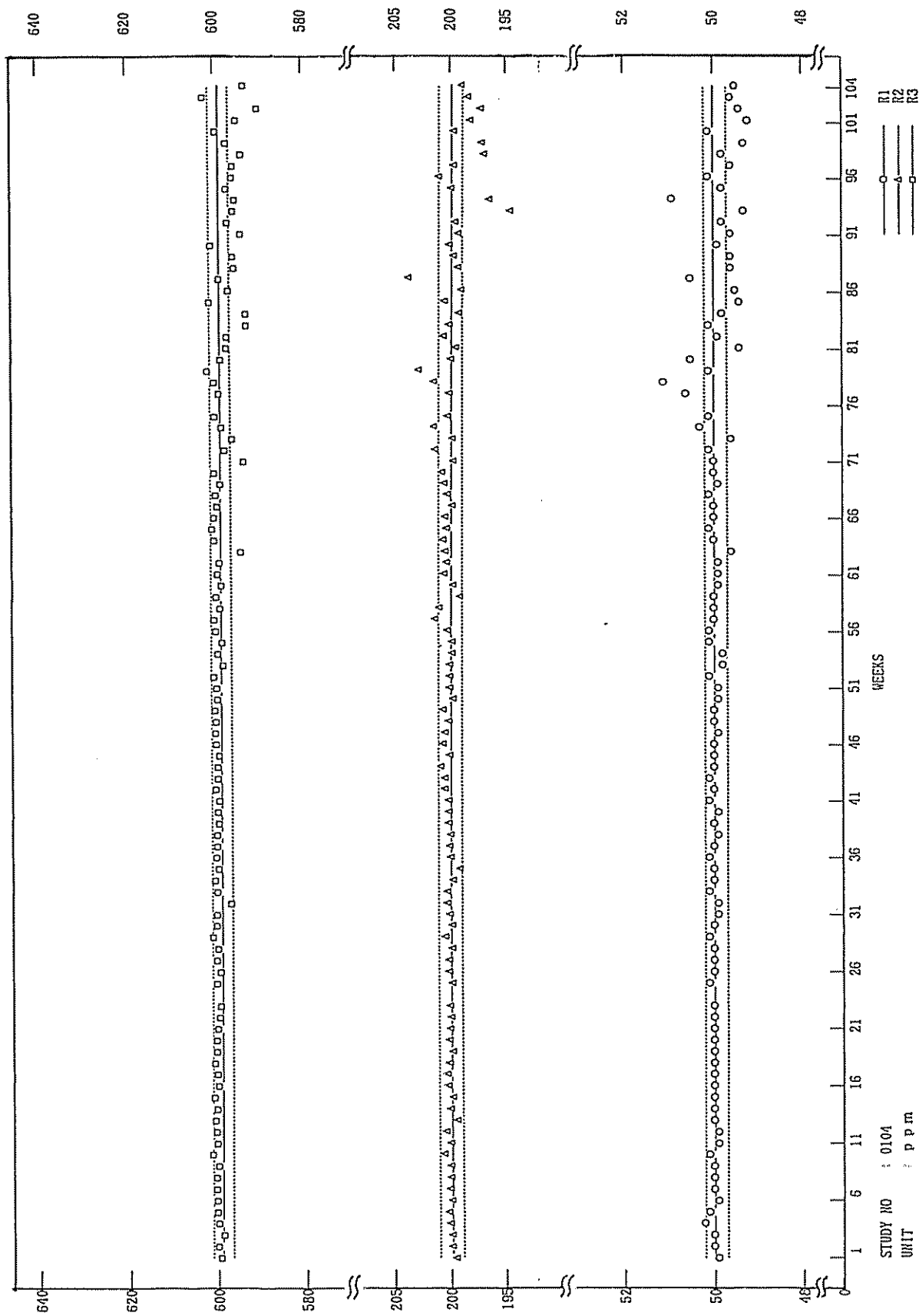
(TWO-TEAR STUDIES)

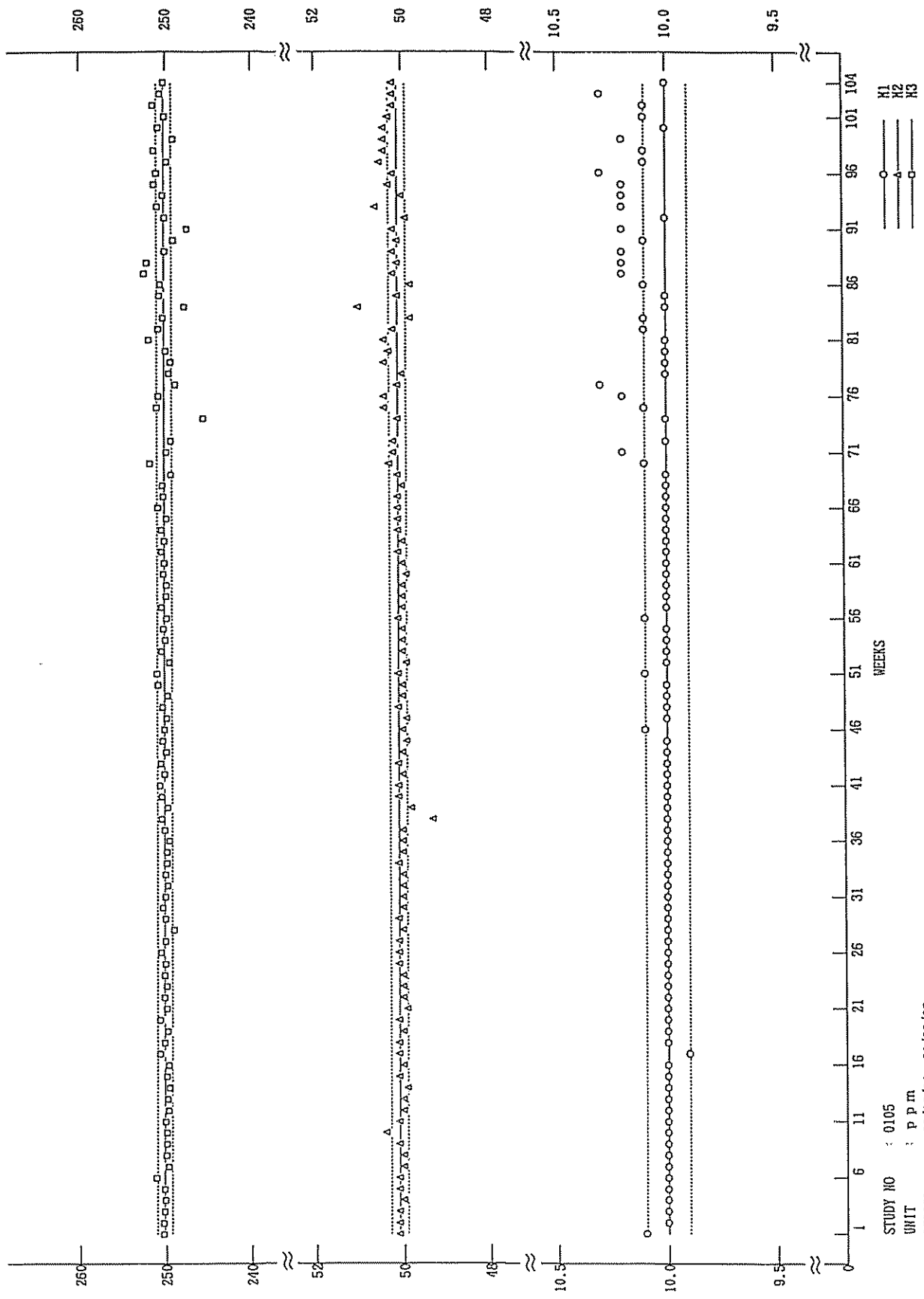
CONCENTRATION OF 1,2-DICHLOROETHANE IN INHALATION CHAMBER
(RAT : TWO-YEAR STUDIES)

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

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

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





H1
 H2
 H3

CONCENTRATION OF TEST SUBSTANCE IN INHALATION (CONC1)

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