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DP/ID/SER.B/639
31 January 1989
ORIGINAL: ENGLISH

17290

TOXICOLOGY RESEARCH LABORATORY

DP/ROK/82/G28

REPUBLIC OF KOREA

Terminal report*

Prepared for the Republic of Korea
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of Jung Koo Roh
National Project Director

Backstopping officer: B. Sugavanam, Chemical Industries Branch

United Nations Industrial Development Organization
Vienna

* This document has not been edited.

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I. Development and immediate objectives.

The main objective is the establishment of irstitute to perform the systematic toxicity testing of chemicals such as agrochemicals, pharmaceuticals, industrial chemicals, and environmental contaminants.

And the immediate objectives are

1) Development of expertise and experimental techniques to perform the testing.

2) Recruit and train the necessary personnel.

3) Furnish the essential equipments for the purpose indicate above 1.

II. Output produced and problem encountered.

a. In the establishment of physical facilities, of animal experiment and laboratory are completed which is three times more than indicated in the project. At the document about 1500m^2 of floor area were planned but now there are more than 4000m^2 of area of animal facility and laboratories are prepared. Appendix (1)

b. Also in the equipment, all the necessary instruments are equipped to perform rodent toxicity and genetic toxicity. Appendix (2)

c. In the personnel there are 42 personnel and 9 more than planned.

d. In the development of expertise and experimental technique there are much progress by utilizing foreign

expert, training abroad of the staff and as well as performing actual experiments.
The number and field for experts and training are shown in Appendix (3)

e. The number and kinds of toxicity testing carried out at the center for last three years are as follows.

Test \ Year	1986	1987	1988	Total
Acute	23	45	75	143
Subacute	2	4	2	8
Chronic		1		1
Carcinogenicity			1	1
Reproductive toxicity	1	2	1	4
Mutagenicity	15	10	7	32
Fish toxicity	10	20	26	56

f. The problem encountered while conducting this project is that we had to undertake following tasks simultaneously:

1) construction of buildings
2) recruiting national staff and sending staff abroad on fellowship
3) recruitment of foreign experts
4) ordering of equipments
5) carrying out the toxicity testing and development of techniques.
6) development of operational systems.

So that in some areas, it was hard to synchronize there objectives or arrange logical timings.

III. Objectives achieved

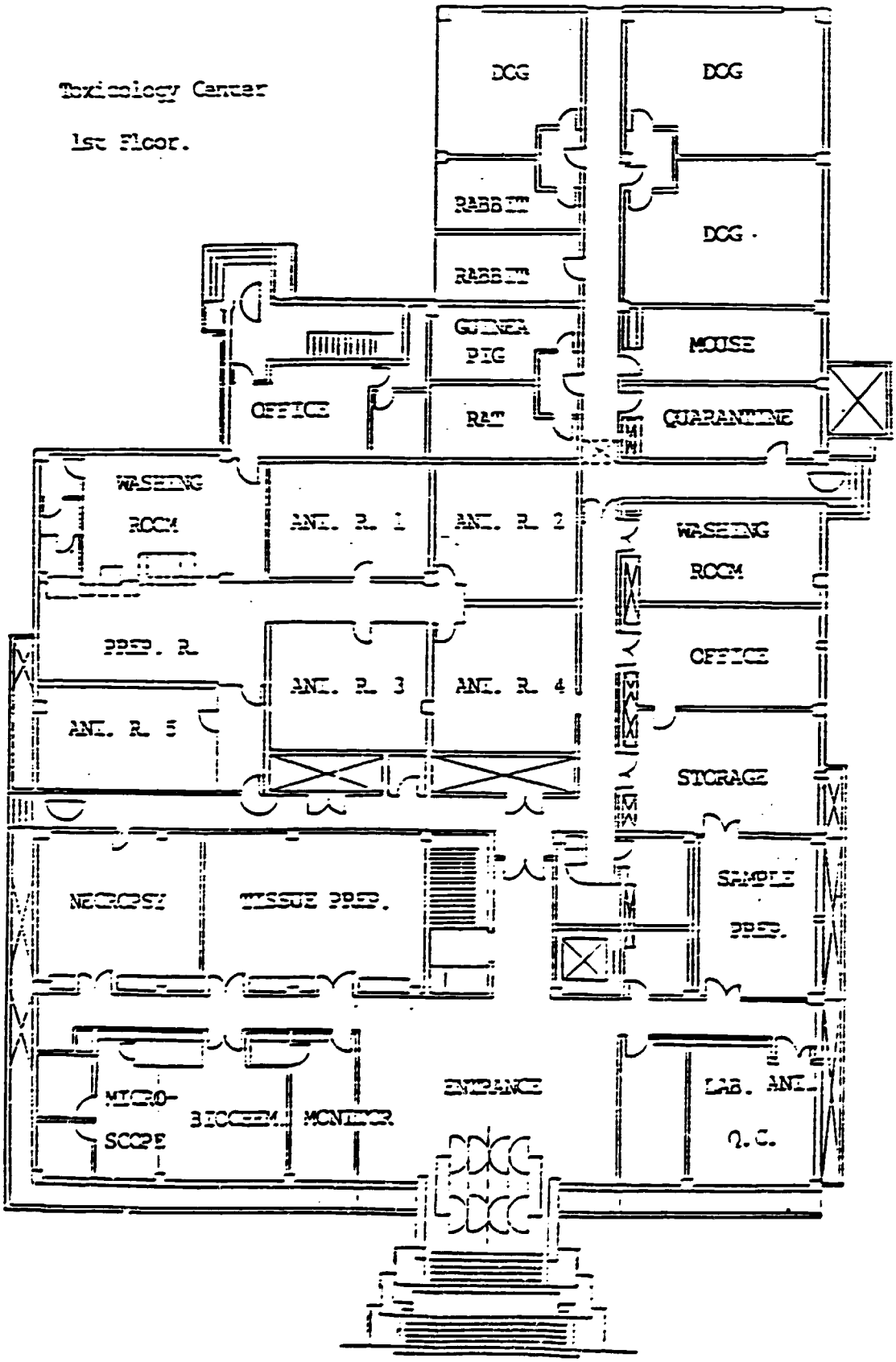
The project has made its immediate objectives, and more specifically, the instition has become the first institution in Korea in carrying out the toxicity testing of chemicals.

IV. Recommendations.

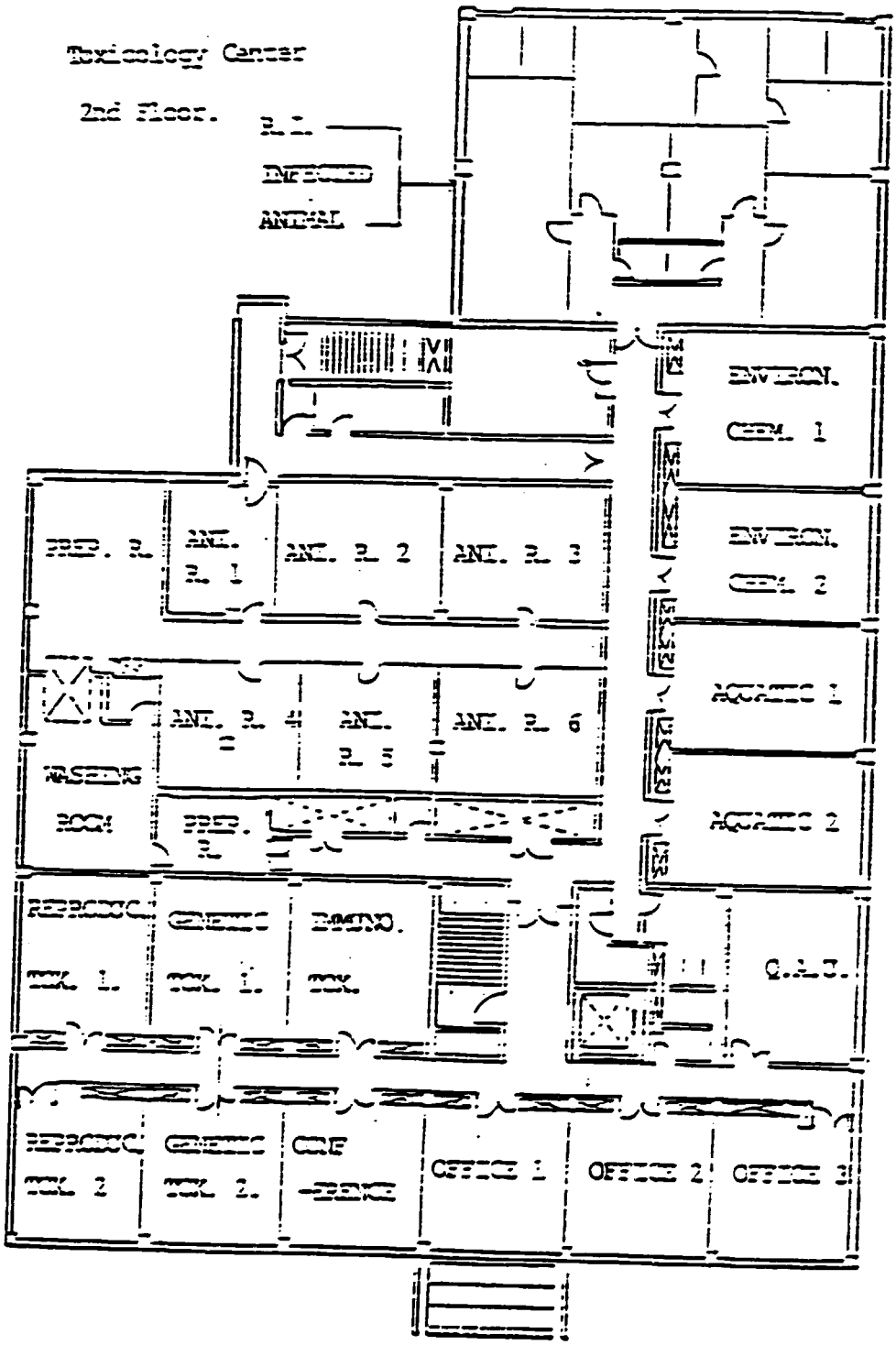
This project has made much more progress than was planned in its immediate objectives. However, in toxicity tesing, international recognition and acceptance of the toxicity data is essential and studies have to comply with the guidelines of GLP (good laboratory practice). Currently this institution does not reach this level and more input in terms of expertise from abroad is highly recommended.

The status of capability of the Toxicology Research Center are shown in Appendix. (4)

Appendix 1 - 1

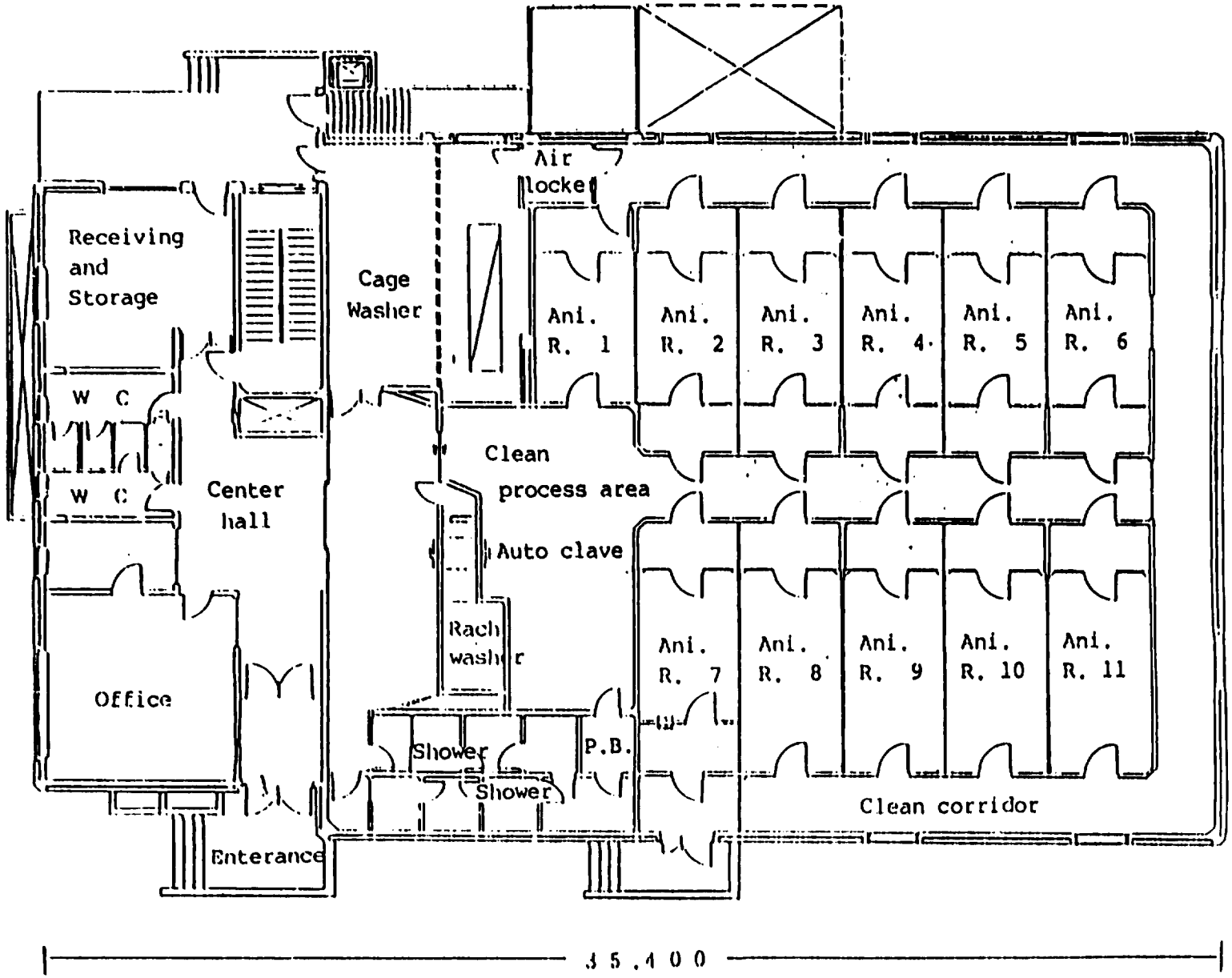

Toxicology Center
1st Floor.
DOG
DOG
RABBIT
DOG
RABBIT
GUINEA PIG
MOUSE
OFFICE
RAT
QUARANTINE
WASHING ROOM
ANI. R. 1
ANI. R. 2
WASHING ROOM
PREP. R.
ANI. R. 3
ANI. R. 4
OFFICE
ANI. R. 5
STORAGE
NECROPSY
TISSUE PREP.
SAMPLE PREP.
MICRO-SCOPE
BIOCHEM.
MONITOR
ENTRANCE
LAB. ANI. Q. C.

Appendix 1 - 2


Toxicology Center
2nd Floor.
ENVIRON.
CHAM. 1
ENVIRON.
CHAM. 2
AQUATIC 1
AQUATIC 2
ANIM. R. 1
ANIM. R. 2
ANIM. R. 3
ANIM. R. 4
ANIM. R. 5
ANIM. R. 6
OFFICE 1
OFFICE 2
OFFICE 3

Appendix 1 - 3

KRICT B.S. (Barrier system) building



THE ITEM OF THE EQUIPMENT AND INSTRUMENT

1. BARRIER SYSTEM (B.S)

No.	N A M E	ea.	M O D E L	MANUFACTORY
1	AUTOCLAVE (E.O. GAS)	1	CFG - 2C4. EX	JAPAN CLEA
2	RACK WASHER	1	CSW - A2	JAPAN CLEA
3	PASS BOX	2	FPB-556	KOREA CHUNHO CO.
4	AUTO-CAGE WASHER	1	CSW - 3KS. RK	JAPAN CLEA
5	AIR SHOWER	2	FAS - 752	KOREA CHUNHO Co.
6	CLEAN BENCH	1	KRICT - 006	"
7	URINE-ANALYZER	1	CLINITEK 10	MILES LABORATORIES
8	F-3 CAMERA	1	F - 3	JAPAN NIKON
9	AUTO-THOMOMETER	1	TRH - CZ	SHINYEI Co.
10	FUNDUS CAMERA	1	RC - 2	HYUNGHA Co.
11	ELECTRIC BALANCE	11	L2200S+ 5 1412 MP8-1 3 L310 3	SARTORIUS, GERMANY SARTORIUS, GERMANY SARTORIUS, GERMANY
12	MANUAL BALANCE	2	ANIMAL SCALE 1 PLATE-TYPE 1	JAPAN SINA Co. GOLDSTAR Co.
13	FEED MIXER	2	V - TYPE (L) 1 V - TYPE (M) 1	MYANGJIN Co. "
14	PERSONAL COMPUTER	3	FMM 1204 T	ADD COMPUTER Co.
15	POWER-FLOW	2	DN - 20A	DAENONG MAN. Co.
16	AUTO BOTTLE WASHER	1	BRUSH ROTARY TYPE	MYANGJIN Co.
17	AMMONIA ANALYZER	1	AP - 400	KYANTMYANG Co.
18	PELLET MILL	1	PMCL - 3	CALIFONIA PELLET MILL CO.
19	UV-STERILIZER	1	SX - 1	DAEYANG Co.
20	WIND-FLOW ANALYZ.	1	V - 01 - AN	AMI Co.

2. REPRODUTION Lab.

No.	N A M E	ea.	M O D E L	MANUFACTORY
1	SOFT X - RAY	1	HITEX HAC - 80	SYSTEM X RAY HITEX
2	MICROSCOPE	1	NIKON SMZ - 10	NIPPON KOGAKU K.K
3	INCUBATOR	2	SC - IB	SECHANG ENGINEERING
4	BALANCE	2	1412 MP 8 -1	SARTORIUS, GERMANY
5	INSTRUTER	1	KRICT - 000	KRICT
6	TRACTION TEST	1	KRICT - 000	KRICT

3. MUTAGENICITY lab.

No.	N A M E	ea.	M O D E L	MANUFACTORY
1	WATER JACKETED CO2 INCUBATOR	2	FORMA 3326 TYPE	FORMA SCI. CO.
2	CO2 Incubator	1	IF - 41 TYPE	YAMATO Sci. CO.
3	PURIFIER	1	NANOPURE - 2 TYPE	BARNSTEAD
4	LAMINAR FLOW CABINET	1	KRICT - 043	GUKJE Sci.
5	pH METER	1	ORIGN 501 TYPE	ORION SCI. CO.
6	COLONY ANALYZER	1	CA - 7II TYPE	ORIENTAL INSTRUMENT LTD.
7	SHAKING INCUBATOR	1	KMC 8480 S TYPE	KOREA MANHATAM Co
8	CONSTANT-DRIER	1	BOCKEL 107801 type	BOCKEL (USA)
9	AUTOCLAVE	1	KRICT - 048	GUKJE Sci. Co.
10	INCUBATOR	2	S - IN TYPE DO - IB GUD	"
11	ULTRA-CENTRIFU.	1	H - 50E - TR TYPE	HANIL Sci. Co.
12	BIOFREEZER	1	FORMA 8317 TYPE	FORMA SCI. CO.
13	LIQUID-TANK	1	SX - 18	MVE CRYOGENICS
14	BIOHARD CABINET	1	FSC 1300 ECIIB	CHUNHO Co.
15	BALANCE	1	2004 MP6 TYPE TYPE 1412 TYPE	SARTORIUS, GERMANY SARTORIUS, GERMANY

4. HISTOPATHOLOGY Lab.

No.	N A M E	ea.	M O D E L	MANUFACTORY
1	MICROTOME	4	820H (ROTARY) TYPE P20 (ROTARY) TYPE 2050 (SUPERCUT) TYPE 33982078(Minotome)	REICHERT-1 AMERICAN OPTICAL - 1 REICHERT,JUNG-1 DAMON-IEC DIVISION-1
2	SLIDE WARMER	2	77 TYPE	FISHER.U.S.A.
3	EMBEDDING CENTER	2	HC-38735	FISHER.U.S.A.
4	HISTOMATIC SLIDE STAINER	2	172 TYPE	FISHER.U.S.A.
5	TISSUE-PROCESSOR	2	166A TYPE	FISHER.U.S.A.
6	INCUBATOR	3	KRICT - 073	SECHANG Co.
7	GLASSKNIFE-MAKER	1	156 TYPE	REICHERT-JUNG U.S.A.
8	REFRIGERATOR	1	GR - 373 AF	KUM SUNG
9	TISSUE PREP.	1	135 TYPE	FISHER SCI. CO.
10	PARAFFIN BATH	1	168 TYPE	FISHER SCI. CO.

5. CLINICAL BIOCHEMISTRY Lab.

No.	N A M E	ea.	M O D E L	MANUFACTORY
1	JCA - VX -1000 AUTOANALYZER	1	JCA VX 3-10(CAI 70022)	JEOL, JAPAN
2	FLAMEPHOTOMETER	1	IL - 943	INSTRUMENTAL LAB. ITALY
3	COULTER COUNTER	1	S - 880	COULTER ELECTRO. U.S.A.
4	MICROSCOPE	1	LIGHT MICROSCOPE	NIKON, JAPAN
5	OVEN	1	SL - A	SECHANG Co.
6	REFRIGERATOR	1	SR -505G	SAM SUNG Co.
7	DEEP FREEZER	1	8317 S/N 81697-330	FORMA SCI. CO.
8	FX-MICROPHOT	1	NIKON, MICROPHOT	NIKON, JAPAN
9	INVERTED MICRO.	1	LIGHT MICROSCOPE	NIKON, JAPAN

6. ANIMAL CARE Lab.

No.	N A M E	ea.	M O D E L	MANUFACTORY
1	INCUBATOR	1	SC - 1B	SECHANG Co.
2	OVEN	1	SC - A	"
3	MICROSCOPE	1	BH - 2	OLYMPUS
4	PURIFIER	1	C - DISI	CHANGSIN Co.
5	CUNTRIFUGER	1	C - 69	HANIL Co.
6	BALANCE	1	EK - 120A	A.D. COMPANY
7	COLONY COUNTER	1	C - CC - 1	CHANGSIN Co.
8	CLEAN BENCH	1	FSC TYPE	CHUNHO Co.

7. CHEMICAL ANALYSIS Lab.

No.	N A M E	ea.	M O D E L	MANUFACTORY
1	BALL MILL	1	KRICT - 091	DONGYANG Co.
2	ANIMAL-FOOD MIXER	1	KRICT - 092	"
3	REFRIGERATOR	1	CRF - 421, 402 S	SAMSUNG Co.
4	GAS CHROMATOGRAPHY	1	MODEL 3700	VARIAN.
5	UV-SPECTROPHOTOMETER	1	UV - 265 TYPE	SHIMADZU CO.
6	CHROMATOGRAPHY	1	UVIDEC - 100 - VI	JASCO.

Appendix 3 - 1

TOXICOLOGY EXPERT PROGRAM

FIELD	NAME	COMPLETED	DURATION	NATION
General Toxicology	M. Nakazawa	1	1983. 8. 2 - 1983. 9. 1	Japan
	P. G. Brantom	1	1986. 2.26 - 1986. 3.19	U.K.
	G. Leslie (1)	1	1987. 1.20 - 1987. 2.17	"
	" (2)	1	1988. 3. 1 - 1988. 3.31	"
	G. Conybeare (1)	1	1987. 7.20 - 1987. 8.13	"
	" (2)	1	1988. 3.10 - 1988. 4. 5	"
	Y. Murata (1)	0.5	1987.10.12 - 1987.10.31	Japan
	" (2)	0.5	1987.11.22 - 1987.12. 7	"
	K. Takahashi	0.5	1988. 3. 8 - 1988. 3.15	"
Animal Science	Z. Sato	0.5	1985. 9. 9 - 1985. 9.21	Japan
	"	0.5	1985.10.21 - 1985.11. 1	"
	"	0.5	1986. 5. 6 - 1986. 5.21	"
	"	0.5	1986. 5.29 - 1986. 6.12	"
	"	0.5	1987. 2. 9 - 1987. 2.16	"
	"	0.5	1987. 3.23 - 1987. 4. 4	"
	"	0.5	1987. 4.22 - 1987. 4.30	"
	"	0.5	1987.10.12 - 1987.10.31	"
	"	0.5	1987.11.18 - 1987.12. 2	"
Aquatic Toxicity	R. Stephenson	0.25	1986. 3.23 - 1986. 3.29	U.K.
	"	0.5	1986. 6. 1 - 1986. 6.15	"
	"	0.25	1987.10. 1 - 1987.10.10	"
Pathology	K. P. Lee	1	1986.11.10 - 1986.12. 8	U S A
	"	1	1987.10. 2 - 1987.10.30	"
	W. H. Butler	1	1987.10.11 - 1987.10.30	U.K.
Data Processing	G. A. Harshman	0.5	1988. 1.14 - 1988. 1.30	U S A
Mutagenecity	D. Anderson	1	1987. 2.16 - 1987. 3. 5	U.K.
	I. P. Lee	1	1987.10.11 - 1987.11.10	U S A
Reproductive Toxicity	H. Kawanishi	0.5	1988. 6.13 - 1988. 6.25	Japan
Special Toxicity	M. Takemoto	0.5	1988. 5.13 - 1988. 6.11	Japan