

VETERINARY

BIOLOGICS

CENTER

VETERINARY BIOLOGICS CENTER

PAKCHONG, THAILAND 30130

Telephone : (044) 311-476

BRIEF HISTORY

Pakchong Veterinary Biologics Center originated in 1931 As The Vaccine and Serum Station of Animal Health Division, Ministry of Agriculture. The purpose was to produce rinderpest inactivated tissue vaccine, anti-rinderpest serum and hemorrhagic septicemia vaccine for use in cattle and buffaloes.

In the early of 1950, The responsibility of this institute had increased a great deal due to the expansion of livestock industry. More buildings and production facilities were established. Production of several more kinds of vaccine; anthrax, black leg, fowl cholera, fowl pox, hog cholera and newcastle disease vaccines, was started.

In 1958, through the co-operation of FAO and USOM, the Foot and Mouth Disease Laboratory was established for the purpose of control and eradication of this disease. This laboratory is now separated from pakchong Veterinary Biologics Center and become the Foot and Mouth Vaccine Production Center.

In 1980, The Quality Control Section was formed. The aim is to keep the standard of veterinary vaccine produced in the country and of the imported one. In 1990, this section is now separated from Veterinary Biologics Center and become the Veterinary Biologics Assay Center.

FUNCTIONS

The Center has 4 main activities :-

1. Manufacture of viral vaccines; bacterial vaccine and diagnostic agents for veterinary use.
2. Production of experimental animals and fertile eggs for use in production of various vaccines.
3. Assay of the biological produced by the Center.
4. Conducting research or experiments related to the improvement of various veterinary biological products.

PERSONNELS

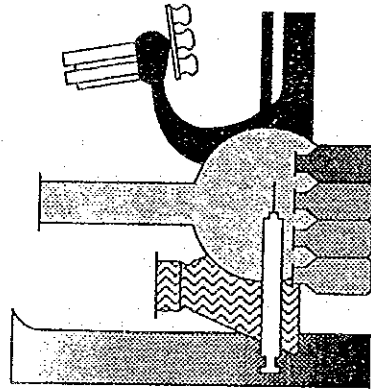
	Vet.	Sci.	Bus.	C.Vet.	Mec.	Others	Total
Director	1	-	-	-	-	-	1
Administration Section	-	-	2	-	2	-	4
Experimental animal section	2	-	-	-	2	-	4
Viral Vaccine Section	12	1	-	3	-	-	16
Bacterial Vaccine Section	8	1	-	6	-	-	15
Total	23	2	2	9	4	-	40
Worker							183

- Vet. : Qualified veterinarian
- Sci. : Scientist (Microdiologist, Biochemist, Pharmacist)
- Bus. : Business officer
- C. Vet. : Certificate Veterinarian
- Mec. : Engineer or Mechanic
- Others : Assistant nurse, animal husbrandy officer.

VETERINARY BIOLOGICAL PRODUCTS PRODUCED BY THE CENTER

No.	Vaccines or Antigens	Average Quantity Produced each year (Dose)
1.	Rinderpest - Lapinized, live, lyophilized - Lapinized avianized, live, lyophilized	340,800 77,700
2.	Swine Fever - Lapinized, lyophilized, live, Chinese strain	5,783,160
3.	Newcastle Disease - Strain F, live, lyophilized - Strain M.P., live, Lyophilized	125,010,000 18,185,000
4.	Fowl pox - Live, lyophilized	28,491,400
5.	Avain Infectious Bronchitis - Live, lyophilized	20,112,500
6.	Duck Plaque - Live, lyophilized	45,286,000
7.	Hemorrhagic Septicemia - Formalin-killed, aluminum gel adjuvant, local strain <u>Pasteurella multocida</u> type 6:B	7,329,900
8.	Fowl Cholera - Formalin-killed, broth bacterin, local strain <u>Pasteurella Multocida</u> type A (Duck strain)	35,790,000
9.	Anthrax Spore - Living spore suspended in glycerin buffer, avirulent <u>Bacillus anthracis</u> strain 34F2	134,960
10.	Black leg - Formalin inactivated, local strain <u>Clostridium chauvoei</u>	112,540
11.	Brucella - Live, lyophilized, <u>Brucella abortus</u> strain 19	82,570
12.	Pullorum Antigen - <u>Salmonella pullorum</u> strain 11	9,670
13.	Brucella Antigen - Plate test : <u>Brucella abortus</u> strain 11 9-3	30,620
	- Tube test : <u>Brucella abortus</u> strain 99	-
	- Rose Bengal	15,350

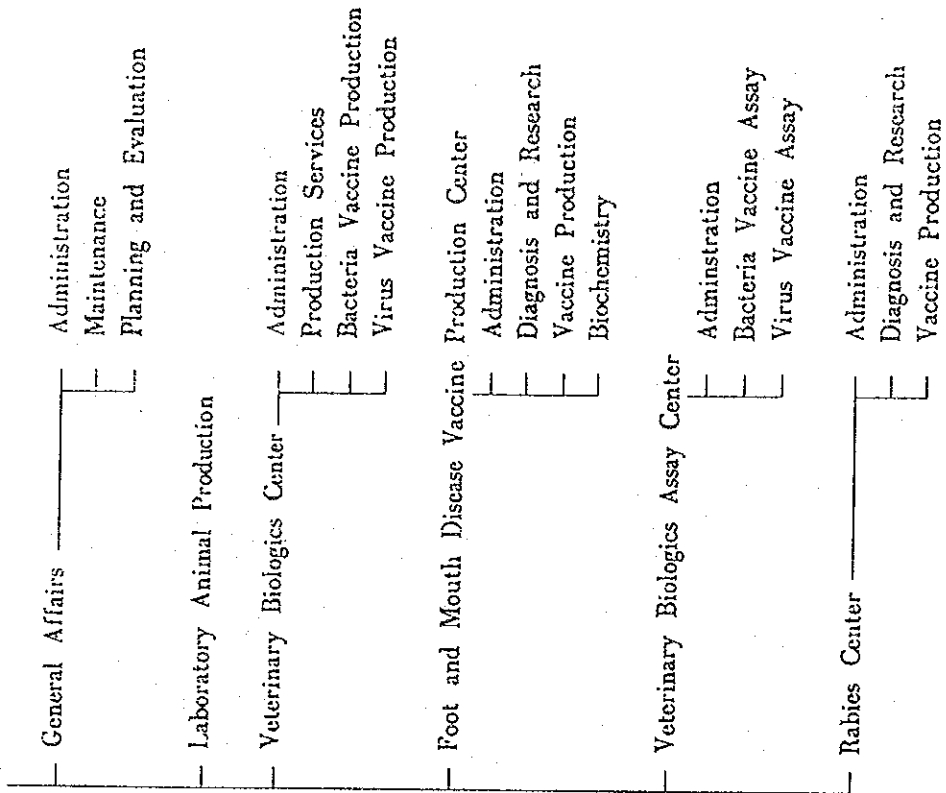
- * VETERINARY BIOLOGICS CENTER
- * FOOT AND MOUTH DISEASE VACCINE PRODUCTION CENTER
- * VETERINARY BIOLOGICS ASSAY CENTER
- * RABIES CENTER



Division of Veterinary Biologics
 Department of Livestock Development
 Ministry of Agriculture and Cooperatives

Organization :

Division of Veterinary Biologics



Location and Site area

The Vet. Biologies Center, Foot and Mouth Disease Vaccine Production Center and Vet. Biologies Assay Center are located at district of Pakchong, Nakhonratchasima province, northeastern part of the country. It is at a distance of 170 kms. from Bangkok by road. The centers can also be reached by train from Bangkok.

The centers occupy an area of land warrant about 8421 rai (about 3368 acres). But only 1000 rai or about one-eighth of the area is used for the centers.

The Rabies Center is located in the building of the Division in the Department at Bangkok.

History

The Vet. Biologies Center originated in 1929 with the assistance of Dr. R.P. Jones, an English advisor in the ministry of Agriculture. The purpose was to produce Rinderpest

vaccine, anti-Rinderpest serum and Haemorrhagic Septicaemia vaccine for cattle and buffaloes. The production of several kinds of vaccines was due to the expansion of livestock in the early of 1950s.

In 1958, through the cooperation of FAO and USOM, the Foot and Mouth Disease Vaccine Production Center was established for the purpose of control and eradication of the disease.

In 1980, the vaccine quality control section was formed in order to keep the standard of veterinary vaccine produced in the country and of imported ones. Because of the importance of this duty, the Vet. Biologie Assay Center was started in 1985.

The Rabies Center was latest established in 1990 due to the great responsibility for control and eradication of Rabies in Thailand. This was attempted by the Department since 1952.

What are the objectives of the Division?

1. to produce adequate animal vaccine used in the country.
2. to control the quality of the animal vaccines both produced in the country and the imported ones.
3. to diagnose several animal diseases with the most rapid and reliable techniques.
4. to study and research for the improvement of the biological products.

Function :

1. Manufacture of vaccines and diagnostic agents for veterinary use.

Cattle and Buffaloes

- Foot and Mouth Disease Vaccine
- Haemorrhagic Septicaemia Vaccine
- Brucellosis Vaccine
- Black Leg Vaccine
- Anthrax Vaccine
- Rinderpest Vaccine

Pig

- Foot and Mouth Disease Vaccine

- Swine Fever Vaccine
- Aujeszky's Disease Vaccine

Poultry

- New Castle Disease Vaccine (F and MP strains)
- Fowl Cholera Vaccine
- Duck Plaque Vaccine
- Infectious Bronchitis Vaccine
- Fowl Pox Vaccine

Dog and Cat

- Rabies Vaccine

Diagnostic Agents

- Brucellosis plate and tube agglutination antigen
- Pullorum plate antigen

2. Production of experimental animals and fertile eggs for use in production of various vaccines.
3. Assay for the biological products both produced in the country and imported from other countries.
4. Conducting research or experiment related to the improvement of various veterinary biological products.

> Import Volume (In Doses)	1990	1991
A) DPT	12,354,410	7,054,810
B) Oral Polio	8,836,000	14,937,040
C) Measles	4,257,460	4,650,000
D) BCG	1,152,800	-

F O B

> Import Value	(PESOS)	(DOLLARS)
A) Rabies Vaccine (Dosage)	1,389,319	49,730
B) Poliomyelitis and Staphylococci Vaccines (dosage)	6,196,932	221,319

BIOLOGICALS PRODUCTION SERVICE

MEDIUM TERM DEVELOPMENT PLAN (1993 - 1998)

I. OBJECTIVE(S):

To formulate plans, policies, programs, strategies and techniques for the processing, manufacture, standardization and improvement of biological products for the Department's use; manufacture vaccines, sera, antitoxins, oresol, herbal, and other biologicals; provide consultative training and advisory services to implementing agencies and conduct studies and researches related to biological production, distribution and use.

II. NATURE OF THE PROJECT:

This development plan includes the operational plan for the current production and quality control with emphasis on the upgrading of some existing facilities/purchase of new equipment. It also includes the establishment of additional vaccine production particularly DPT and improvement of Rabies Vaccine from Semple procedure to Tissue Culture.

III. ACTIVITY:

The project activity consists primarily of the production of vaccines, sera, oresol, herbal, and other biologicals.

The project task is directed to accomplish the following:

1. To ensure availability of continuous supply of vaccines and other biologicals required by the Department of Health; and
2. To achieve development of DPT Vaccine and Tissue Culture Rabies Vaccine.

This activity is envisioned to provide support to the impact programs of the Department of Health, more particularly to the following:

1. Expanded Program on Immunization (EPI)
2. Control of Communicable Diseases (CCD)
3. Control of Diarrheal Diseases (CDD)
4. Maternal and Child Health Care Program (MCH)

IV. PROJECTED TARGET, HUMAN RESOURCE(HANPOWER) AND BUDGET REQUIREMENT

The projected targets for 1993-1998 are envisioned to be accomplished utilizing the available facilities, materials and funds. (See attached PROJECTED TARGET)

V. HUMAN RESOURCE DEVELOPMENT

A. In-service Training

B. Fellowship

1. Vaccine Improvement (BCG, Tetanus and Rabies)
2. Sera Production and Control Improvement (Cobra Antivenin)
3. Diagnostic Antigen-Antisera Production and Control Improvement (Widal, Weil Felix, Salmonella, Shigella and Cholera)
4. Vaccine Development (DPT)

VI. CONSULTANSHIP

1. DPT Production and Control
2. Tissue-Culture Rabies Vaccine Production and Control


VII. PROBLEMS

Existing old buildings are rapidly deteriorating and majority of equipment are old and obsolete.

VIII. RECOMMENDATIONS

To expedite the approval of project proposal for foreign assistance (JICA).

Submitted by:


BERNARDO T. MORA, JR., M.D., CESO II
Director III

DMM/TPE/mgm

Annex 5 *Continuation*

PROJECTED TARGET
Doses per Year

	1993	1994	1995	1996	1997	1998
EPI VACCINE REQUIREMENTS						
BCG FD Vaccine	9,326,474	9,540,161	9,759,176	9,959,176	10,150,000	10,350,000
Tetanus Toxoid	15,299,466	15,650,671	16,010,841	16,500,000	17,000,000	17,250,000
NON-EPI VACCINES & OTHERS						
PPD 2 T.U.	300,000	400,000	500,000	600,000	700,000	750,000
Cobra Antivenin	3,000	3,300	3,500	4,000	4,100	4,200
Rabies Vaccine, Semple	500,000	504,000	520,000	560,000	568,000	568,000
Cholera Vaccine	400,000	400,000	400,000	400,000	400,000	400,000
Typhoid Vaccine	200,000	200,000	200,000	200,000	200,000	200,000
Widal (Diagnostic Antigen)	40,000	40,000	40,000	40,000	40,000	40,000
Weil Felix (Diagnostic Antigen)	600	600	600	600	600	600
Salmonella Typing Sera	800	800	800	800	800	800
Shigella Typing Sera	300	300	300	300	300	300
Cholera Typing Sera	300	300	300	300	300	300
Oresol Powder	4,000,000	4,400,000	4,840,000	5,324,000	5,856,400	6,442,040
COST IN PESOS						
BCG FD Vaccine at P1.70 per dose	P15,855,000	P16,218,273	P16,590,599	P16,930,599	P17,255,000	P17,595,000
PPD 2 T.U. at P0.87 per dose	255,000	348,000	425,000	510,000	595,000	637,500
Tetanus Toxoid at P0.85 per dose	13,004,546	13,303,241	13,609,215	14,025,000	14,450,000	14,662,500
Cobra Antivenin at P311.00 per dose	933,000	1,026,300	1,088,500	1,244,000	1,275,100	1,306,200
Rabies Vaccine, Semple at P5.88 per dose	2,940,000	2,963,520	3,057,600	3,292,800	3,339,640	3,339,840
Cholera Vaccine at P1.28 per dose	512,000	512,000	512,000	512,000	512,000	512,000
Typhoid Vaccine at P1.28 per dose	256,000	256,000	256,000	256,000	256,000	256,000
Widal (Diagnostic Antigen) P360.00/set	72,000	72,000	72,000	72,000	72,000	72,000
Weil Felix (Diagnostic Antigen) P360.00/set	1,440	1,584	1,740	1,912	2,100	2,308
Salmonella Typing Sera P525.00/set	30,000	32,971	36,228	39,828	43,771	48,114
Shigella Typing Sera P525.00/set	15,750	17,310	19,020	20,910	22,980	25,260
Cholera Typing Sera P525.00/set	26,250	28,850	31,700	34,850	38,300	42,100
Oresol Powder P2.48/packet	9,920,000	11,968,000	14,471,600	17,462,720	21,083,040	25,510,478
TOTAL:	P43,822,986	P46,748,049	P50,171,202	P54,402,619	P58,945,131	P64,009,300

Agency - *San Francisco State University*

OTHER PROJECT REQUIREMENTS

BUILDINGS:

	1993	1994	1995	1996	1997	1998
BCG Building (Renovation)	\$1,500,000					
Diphtheria Building (Construction)		\$3,000,000	\$3,000,000			
Rabies Building (Construction)			5,000,000			
Animal House Building (Construction)				\$3,000,000		
Quality Control Building (Construction)					\$3,000,000	
T O T A L :	<u>\$1,500,000</u>	<u>\$3,000,000</u>	<u>\$6,000,000</u>	<u>\$3,000,000</u>	<u>\$3,000,000</u>	

EQUIPMENT:

BCG Unit:

- Warburg Apparatus/equivalent-1 unit \$162,500
- Balance, electronic, top loading \$44,500
- 6000 gram capacity-1 unit \$175,000
- Automatic Pipetor-1 unit
- Dispenses aqueous to medium viscosity solutions of controlled speeds, ten to sixty deliveries per minute
- 1/50, no oiling, Cat. No. 13-685-1
- Fischer Scientific with glass-syringe - 5 ml to 10 ml--40 pcs. \$60,000
- Capacity Cat. No. 13-688-3
- Valve assembly - consists of 4 sets \$25,000
- intake and output valves, tubing, delivery tip connector, grooved valve pin, stainless steel

Tetanus Unit:

- Class II, 8" Sash Opening \$120,000
- Cabinet width-6 ft. featuring two 1/2 HP motor-blowers with solid state control, two 30 W fluorescent lamps, 2 115 VAC Cat. No. L32502-10 with service fixture for positive pressure and vacuum connection

Appendix 5 - CONTINUING

1993 1994 1995 1996 1997 1998

- a) Base Unit - For use as stand for 6 ft. cabinet
b) UV Light Kit - to decontaminate work areas, comes with 30 watts lamp and all installation hardware
Cat. No. L-33502-50
Cole Palmer 1991-1992 \$58,325
Large Volume Stirrer - 1 unit
Cat. No. L51200-15 Cole Palmer 1991-1992
- a) Control Module - 1 unit \$50,175
Cat. No. L51200-65 Cole Palmer 1991-1992
- Pressure Tank Filter Holder - 2 units \$266,325
a) Pressure Tank - stainless steel type A 181316; Cap. 5 liters
Filter - Stainless Steel Type A 181316; Sealing of holder- two silicones O-rings, 134 X 4 mm sealing of valves PTFE disk and Viton O-ring, 3 X 1.5 filter dia. req - membrane filter 142 mm pre-filter 130 mm filtration area; for 10 mm hose; weight 6 kg. maximum operating pressure-700 KPa sterilization; autoclaving 134°C dry heat 180°C Sartorius Cat. 1991-1992 SU 16275 \$97,000
- Analytical Balance - 1 unit
Readability - 0.1 mg; pan size 3 1/2 in Power 115 VAC; Cat. No. L-11200-00 Cole Palmer 1991-1992

Cobra Antivehinn Unit:

pH meter, digital pH 1-50 - 1 unit \$55,000
Auto calibration

Annex 5 QUALIFICATION

	1993	1994	1995	1996	1997	1998
QUALITY CONTROL DIVISION:						
Animal Balance - 1 unit	\$6,700					
Pyrogen Test Processor - 1 unit	\$85,000					
Total Nitrogen Analyzer - 1 unit	\$250,000					
Atomic Absorption - 1 unit	\$150,000					
CO ₂ Incubator - 1 unit	\$60,300					
Water Bath with Shaker - 2 units	\$45,269					
Analytical Balance - 4 units		\$313,040				
Distilling Apparatus - 1 unit		\$237,860				
Dispenser (For Liquid Media) - 1 unit	\$35,815					
TOTAL:	<u>\$1,743,909</u>	<u>\$550,900</u>	-	-	-	-
GRAND TOTAL:	<u>\$47,066,895</u>	<u>\$50,298,949</u>	<u>\$56,171,202</u>	<u>\$57,402,613</u>	<u>\$61,945,131</u>	<u>\$64,009,300</u>

Operational Plans

The Biologicals Production Service has its sights set across the century as it pursues its Short-Term, Medium-Term, and Long-Term Development Plans. These are:

1992

BPS aims to upgrade its facilities to higher technology standards, develop its manpower through training here and abroad, and achieve full production capability of T using a fermentor system.

1996

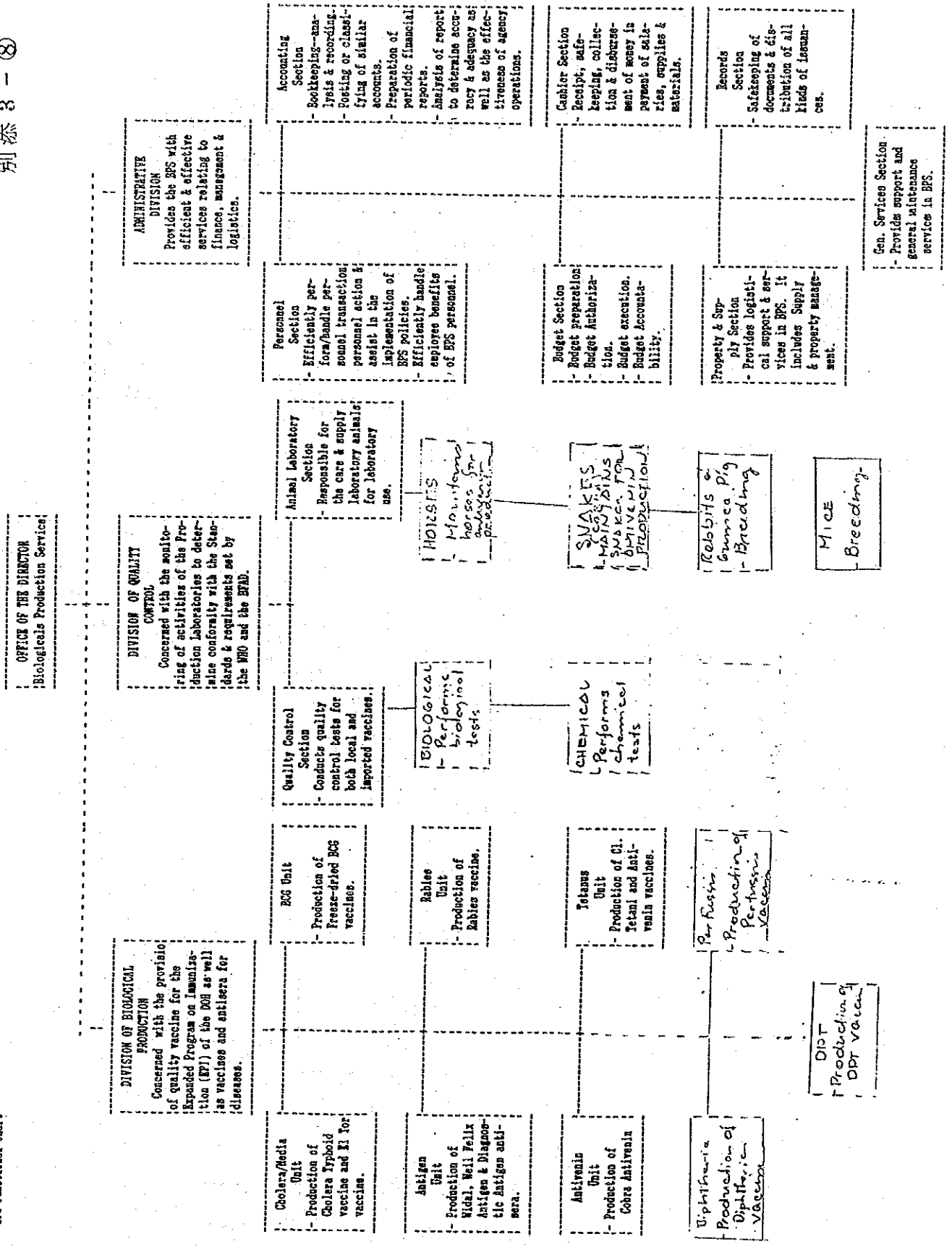
BPS intends to start production of Oral Polio and Measles vaccines and Vero-cell Derived Inactivated Rabies vaccines. It also seeks to pilot production of Oral Attenuated Typhoid vaccines by this time.

2000

BPS aims to start production of Hepatitis B vaccines and Polysaccharide vaccines. It also plans to achieve diversification to the manufacture of biological by-products at the turn of the century.



Annex B 4.6
 Existing
 EPS Functional Chart



OFFICE OF THE DIRECTOR
 Biological Production Service

DIVISION OF QUALITY CONTROL
 Concerned with the monitoring of activities of the Production Laboratories to determine conformity with the Standards & requirements set by the WHO and the EPAD.

DIVISION OF BIOLOGICAL PRODUCTION
 Concerned with the provision of quality vaccine for the Expanded Program on Immunization (EPI) of the ODH as well as vaccines and antisera for diseases.

Quality Control Section
 - Conducts quality control tests for both local and imported vaccines.

BCG Unit
 - Production of Freeze-dried BCG vaccines.

Cholera/Media Unit
 - Production of Cholera typhoid vaccine and E1 for vaccine.

Antigen Unit
 - Production of Widal, Weil Felix Antigen & Diagnostic Antigen antisera.

BIOLOGICAL
 - Performs biological tests

Rabies Unit
 - Production of Rabies vaccine.

Antivenin Unit
 - Production of Cobra Antivenin

Animal Laboratory Section
 - Responsible for the care & supply laboratory animals for laboratory use.

HORSES
 - Maintains horses for production

CHEMICAL
 - Performs chemical tests

Tetanus Unit
 - Production of Tetan and Anti-tetani vaccines.

Diphtheria
 Production of Diphtheria Vaccine

Personnel Section
 - Efficiently perform/handle personnel transaction; assist in the implementation of BPS policies; efficiently handle employee benefits of BPS personnel.

Accounting Section
 - Bookkeeping-analysis & recording; Posting or classifying of similar accounts; Preparation of periodic financial reports; Analysis of report to determine accuracy & adequacy as well as the effectiveness of agency operations.

Budget Section
 - Budget preparation; Budget Authorization; Budget execution; Budget Accountability.

Property & Supply Section
 - Provides logistical support & services in BPS. It includes Supply & property management.

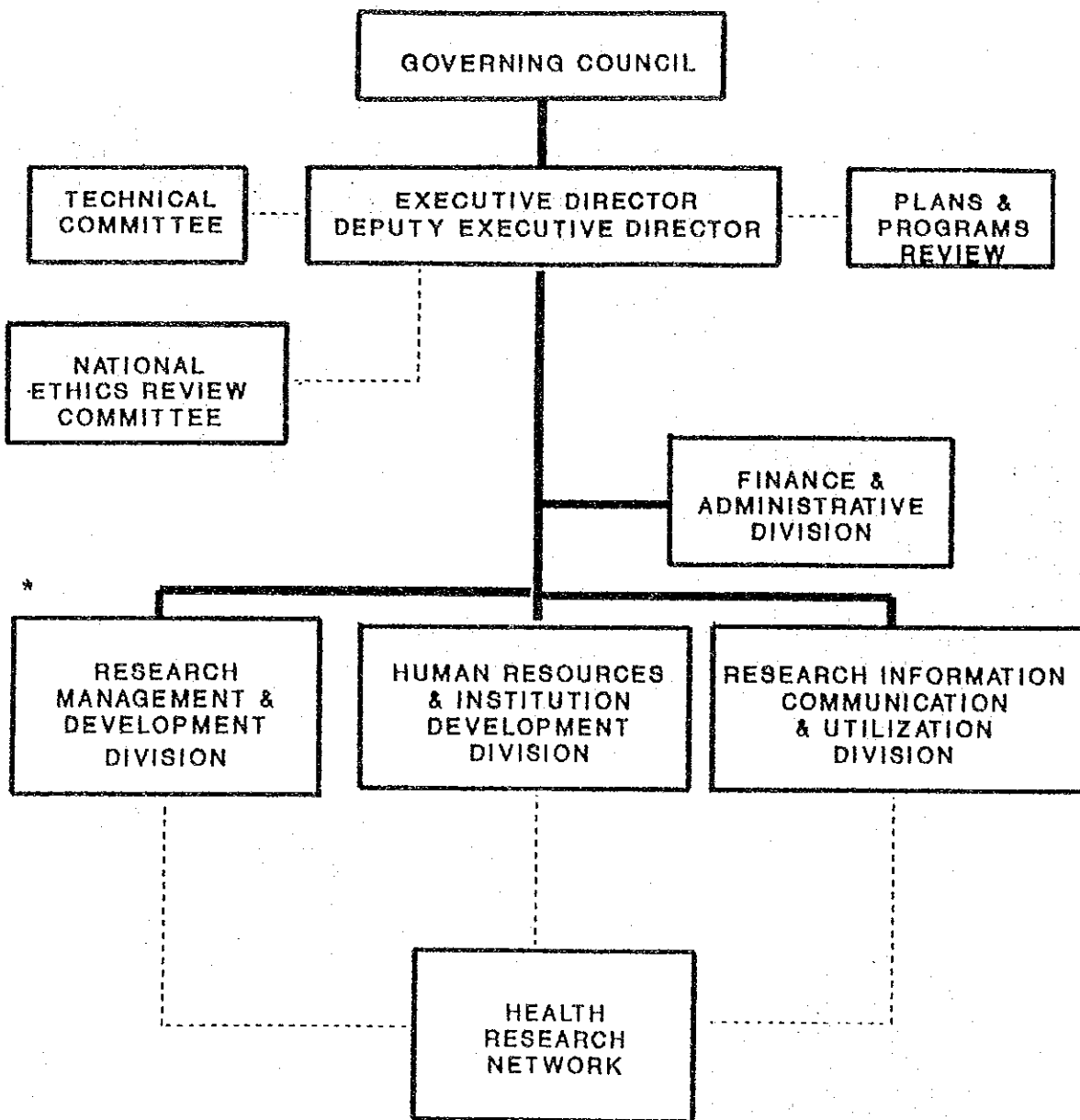
Cashier Section
 - Receipt, safe-keeping, collection & disbursement of money in payment of salaries, supplies & materials.

Records Section
 - Safeguarding of documents & distribution of all kinds of issuances.

Gen. Services Section
 - Provides support and general maintenance services in BPS.

DPT
 Production of DPT Vaccine

ORGANIZATIONAL CHART (PCHRD)



* DIVISION FROM WHICH THE PARTICIPANT COMES FROM



JICA
Japan
International
Cooperation
Agency
国際協力事業団

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