昭和５６年度活動報告

渡　邊　正　夫

1　昭和56年度活動実績（敬称略）

1－1　専門家の派遣

1－1－1　派　遣

昭和56年度の専門家の派遣は，a）津野　正朗（細菌学）　b）武衛　和夫（医動物学）c）丸井　英二（公衆衛生学）　d）伊藤　宝務（ウィルス学）　e）外海　泰秀　（食品分析学）　f）関　タマノ（栄養学）　g）小泉　正之（電気）　h）西村　雅晴（公衆衛生学）

の８名であった。

なお，５名が長期専門家，３名が短期専門家であった。

1－1－2　帰　国

昭和56年度の専門家の帰国は，a）熊岡　爽一（チームリーダー）　b）酒井　寛（臨生検査学）　c）丸井　英二（公衆衛生学）d）関　タマノ（栄養学）　e）小泉　正之（電気）

の５名であった。

1－1－3　チームの構成

従って，昭和56年度のチームの構成は下記のとおり。

	氏　名	分　野	派遣期間	所属先
1	熊岡爽一	チームリーダー	23/04/'77～30/04/'81	なし
2	長谷川　恩	〃	10/04/'79～31/03/'84	なし
3	津野正朗	細菌学	15/04/'81～14/04/'82	都立衛生研究所
4	武衛和夫	医動物学	19/05/'81～18/05/'83	なし
5	丸井英二	公衆衛生学	19/05/'81～18/11/'81	東京大学
6	西村雅晴	〃	20/01/'82～19/01/'83	独協医大

	氏　　名	分　　野	派　遣　期　間	所属先
7	伊　藤　宝　務	ウ イ ル ス 学	←→ 03/07/'81～02/07/'83	武田薬品
8	外　海　泰　秀	食 品 分 析 学	←→ 05/08/'81～04/08/'82	国立衛生試験場
9	関　　タマノ	栄　養　学	←→ 05/08/'81～04/08/'81	活水女子短大
10	小　泉　正　之	電　　気	←→ 30/11/'81～13/12/'81	松下電気
11	渡　邊　正　夫	業　務　調　整	←→ 13/03/'80～31/03/'84	JICA

※　長谷川専門家（医動物学）は，4月1日をもって，新チームリーダーに就任

プロジェクトの協力期間延長（3ケ年）の1ケ年目のため，チームリーダー，調整員を除き，全専門家が入れ替ることになった。

1－2　調査団の派遣

1－2－1　計画打ち合せチーム

派遣目的：　a）プロジェクトサイトの諸問題の検討

b）今後の活動計画全般の打ち合せ

派遣期間：　08/02/'82 ～ 19/02/'82

構　　成：　深　井　孝之助　　大阪大学微生物研究所教授

国内委員長

岡　崎　俊　夫　　JICA医療協力部

1－2－2　その他

専門家等派遣前中期研修（保健医療コース）の一貫として，3月1日から3日間，5名の参加者（研修生4名，同行者1名）がプロジェクトサイトを視察した。

1－3　研修員の受入れ

昭和56年度の研修員の受入れは，下記の通り。

氏　名 所属先	研修先	期　間	備考
Mrs. Laojana Chewcndsai Staff, Division of Medical Entomology	厚生省，予研	29/03/'82～28/03/'83	一般
Miss. Supawan Chongthumawa Staff, Division of Clinical Chemistry	阪大微研	29/03/'82～28/03/'83	一般
Dr. Kanai Chatiyanonda Director, Virus Reserch Institute	厚生省	28/03/'82～27/06/'82	一般

1－4　機材供与について

昭和56年度の機材は，大部分，昭和57年度に到着予定のため，本年度分は下記の通り。

No.	便　名	CIF Bangkok	B/L, Insurance	主要材料
1	JL	147,301	131-50218420	Penicilin

1－5　携行機材について

昭和56年度に供与された携行機材は下記の通り。

（但し，輸送機材分は除外）

番号	便　名	CIF Bangkok	B/L, Insurance	主要機材	備　考
1	CX-501	312,560	JFC-03049200 16C/TE-E 37191	Cleaning Roller	長谷川リーダー
2	CX-501	555,705	JFC-03049152 16C/TE-E 37190	Sealer	津野専門家
3	JL-717	1,018,400	131-59083345 319-047299	Light Trap	武衛専門家
4	CX-	123,145	160-21903803 313917123	Rotazyme	津野専門家
5	TG-601	830,501	217-16581714 319-047439	Filter Holder	伊藤専門家
6	JL-717	162,025	131-59513296 313919388	Shigella Polyvalent B	津野専門家
7	JL-717	1,603,279	131-59650242 319-047705	Gas Chrom-atograph	外海専門家

番号	便　名	CIF Bangkok	B/L, Insurance	主要機材	備　　考
8	JL−717	675,501	131−59914363 319−047767	Tube	長谷川 チームリーダー
9	JL−717	293,715	131−59914352 319−047764	Serum	〃
10	JL−465	448,884	131−50156761 319−047839	Tester	津野専門家
11	JL−475	542,461	131−50355001 319−047942	Tape Cartrige	西村専門家
		¥6,566,176			

1−6　レポートの発行

昭和56年度に発行されたレポートは下記の通り。

1−6−1　タイ「地域保健活動向上計画」プロジェクト・エバリュエーションチーム報告書

昭和55年11月に実施された本プロジェクトに対するエバリュエーションの結果をとりまとめ発行した。

1−6−2　タイ国地域保健活動向上計画報告書Ⅴ

昭和55年度のプロジェクトの活動内容を編集した。

1−6−3　地域保健活動向上計画＝その現状と展望（1981）＝

本プロジェクトの抱えている問題点を整理し，今後の活動の参考資料として編集した。

1−6−4　Promotion of Provincial Health Service Project
＝Fundamental material＝

本プロジェクトの関係者全員が同一の認識でプロジェクトの運営にあたることを期待し，Record of Discussion (R/D), Plan of Operation (P/O) Plan of Action (P/A) をとりまとめて発行した。

1−6−5　地域保健活動向上計画プロジェクト　＝オリエンテーション資料＝

新たに着任する専門家に対するオリエンテーションと目的として，公衆衛生の現状，関係機関の機構図，プロジェクトの現状等をとりまとめ発行した。

なお，3〜5は，現地（タイ国）で印刷・発行したものである。

1−7　プログレスレポートの発行

昭和56年度のプログレスレポートの発行は下記の通り。

1－7－1　Progress Report Ⅱ

April ～ June 1981

1－7－2　Progress Report Ⅲ

July ～ September　1981

1－7－3　Progress Report Ⅳ

October ～ December　1981

1－7－4　Progress Report Ⅴ

January ～ March　1982

なお，これらProgress Report は，資料として本報告書に添付されている。

1－8　コーディネーティング　コミッティーについて

昭和56年度に開催されたコーディネーティングコミッティーは下記の通り。

1－8－1　第7回コーディネーティングコミッティー

4月28日　於　医科学局

主な議題は下記の通り。

a）Field Project Manager の新任

b）Activity Ⅳ の Manager の新任

c）プロジェクトの3ケ年の延長に係る問題点

d）昭和56年度の日本からのプロジェクトに対するインプットの説明（機材専門家，研修員）

e）基盤整備費による給水施設改良事業についての説明

1－8－2　第8回コーディネーティングコミッティー

11月16日　於　医科学局

主な議題は下記の通り。

a）Project Director の新任

b）給水施設改良事業についての進展状況の説明

1－8－3　第9回コーディネーティングコミッティー

3月25日　於　医科学局

主な議題は下記の通り。

a）昭和57年度の機材，専門家，研究員に関する件。

なお，これら3回のMinutes は，資料として本報告書に添付されている。

1－9　プロジェクト基盤整備費による水供給施設の改良事業について

本事業は，1980年度の事前調査，実施設計調査を受けて1982年1月29日 JICA バンコク事務所長と五洲興産㈱（現地法人）の間に契約を成立させた。内容的には，検査室への水の安定供給を目的とした。

a) Prapokklao 病院内及びModel Area での地域住民への安全な飲料水の供給を目的とした b) Nongkarn 地区 c) Pongnamrong 地区での井戸の掘さく（3本）であった。実際の工事は，82年度に殆んどずれ込んでいるので詳細は，次年度の報告に譲りたい。

2. プロジェクトの動き

2－1 はじめに（目標の設定とその管理）

本プロジェクトは，1980年12月1日の合意議事録 Record of Discussion（R／D）により，更に3ケ年延長された。

一方，1981年4月に開催されたCoordinating Committee は，これまでの5つのActivity を整理総合し，プロジェクトの完了に向けての新しい実行計画・Plan of Action（P／A）の作成を決定した。このような動きは，国内委員会においても承認され，各 Activity 間の相互関連のあり方及びその具体的な肉づけの作業が実施されることとなった。

これらの作業は，とりあえず，在タイの日本人専門家チームの中での討論をたたき台として進められた。

そして，まず基本作業としてR／D及び実施計画・Plan of Operation（P／O）を読み直し，本プロジェクトが a)タイ主導の b）公衆衛生に基盤を持ち，c）地域指向性を持ち，かつ d)統合的なプロジェクトであること，である。次いで，a)プロジェクトの目ざすものの具体化 b)その目標各々の相互関連及び位置づけ c)プロジェクト構造の理解（特に上位目標とのかかわりにおいて）等の解明に移った。つまり，公衆衛生活動というソフト中心であり，かつ活動領域が広いという他に比べ著しい特色をもつ本プロジェクトに，どのような総合的，かつ具体的な目標を持たせうるのかを目ざした。

これらの成果としては，a)地域保健活動向上計画＝その現状と展望（1981）＝，b)b)Provincial Health Services Project ＝ fundamental material ＝ としてまとめられ，かつ副次的に c)地域保健活動向上計画プロジェクト＝オリエンテーレション資料＝として作成された。

次いで，このような大わく設定の作業をうけて，具体的には以下に述べるような諸点について実行がなされた。

2－2 専門家会議の定例化及びその記録化

本プロジェクトは，活動地域が，バンコク・チョンブリ・チャンタブリと距離的に離れていること。又，総合プロジェクトの常として各専門家が各々独自の活動領域を持っている点が特色としてあげられる。

これらは，ややもするとチームとしての活動（総合プロジェクトとしての活動）をとりに

くくさせる原因ともなりかねない点である。

この対策として，従来から実施されてきた専門家会議をはっきりと月例化し，かつ記録を残すこととした。つまり，上記の疎外要因をとり除き，総合プロジェクトの中で各専門家が個々の領域の活動をになえる体制を作ることが目標であった。具体的には，この会議を“チームとしての共通認識の確認の場”として位置づけ，かつ会議の内容の徹底化のため，議長を持ち廻りとし，議事録を配布することとした。

なお，81年度の専門家会議々事録は，資料として添付されている。

2－3　Scope of Work（S／W）の作成の義務化

来タイする専門家の最初の業務として，S／Wの作成を義務づけることとした。

P／Aを直接の上位目標として，つまり，ペロジェクトの具体的な活動の大わくとして，位置づけ，各専門家はその個別領域で，自己の業務範囲及びそのスケジュールを相手側との協議の上で文書化し，カウンターパート及び他の専門家に配付することにした。

このS／W作成の目ざすものは，第一に　a)専門家が業務に入る最初のステップとして，相手側の事情・意向を確認できる　b)相手側も専門家がその派遣期間内に何をどのように行ないたいのかが理解できる点にある。

又，第二として，このS／Wをチームとして活用することにより，各専門家間の相互協力（＝相乗効果）を容易にする点にある。そして，第三として（特に重要な点であるが），このS／Wの進展状況を定期的にfollowすることにより，プロジェクトの種々の阻害要因を発見する材料とすることができることにある。

2－4　報告書について

2－4－1　業務報告書について

各専門家の業務上の問題点・現状の把握を目的として，3ケ月に一度，各専門家から調整員・チームリーダーに対し，業務報告書の提出を規定した。

つまり，2－3で述べたS／Wの作成目的の第三点“S／Wの進展状況を定期的にfollowする”ことの具体的な中味として位置づけた。

2－4－2　年次報告書について

従来，年次報告書は，殆んど，帰国専門家の総合報告書をもとにして構成された為“技術・研究報告書”と“原状報告書”の二面性をもったものとなってきた。この混乱を避ける為，本年度から意識的に報告書を二本立てとし，はっきり区別することとした。つまり，“技術・研究報告書”としては従来ならある3ケ月ごとの　a)プログレスレポートと，原則として年に1回発行する　b)Interim Report（最終年はFinal Report）を設置した。これらは，英文で発表され，特に　b)は，プロジェクトの研究上の成果（Activity V）を広く，発表することを目的とする。一方，原状の報告書としては，2－4－1に述べた　a)業務報告書と，内容を純化させた　b)年次報告書を設定した。つまり，この新

しい年次報告書の目的は，１ケ年間の活動の報告であり，現状の確認であり，かつ最終的な評価の為の材料として機能することにある。

PROGRESS REPORT I

THE PROMOTION OF PROVINCIAL HEALTH SERVICES PROJECT

(Chanthaburi Project)

January - March, 1982

Department of Medical Sciences, Ministry of Public Health

Yod-se, Bangkok 1 Thailand

Distribution of copies :-

Director-General, Department of Medical Sciences
Deputy Director-General, Department of Medical Sciences (2)
Director, Virus Research Institute
Director, Division of Food Analysis
Director, Division of Medical Entomology
Director, Division of Provincial Health Laboratory Services
Director, Division of Clinical Pathology
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Provincial Chief Medical Officer, Chon Buri
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Dr. Khunthong Sukatipanta, Assistant Chief, Provincial Medical Officer, Chanthabur
Miss. Paradee Mamechai, Division of Provincial Health Laboratory Services

ACTIVITY I

Strengthening of Provincial Health Laboratory (PHL) and Side-room Laboratory (SRL), Chanthaburi.

1. Strengthening of the PHL as a clinical diagnostic laboratory

1.1 Clinical chemistry

No further progress

1.2 Clinical Hematology

a. Number of white blood cell count, automated method : 5929
b. Number of red blood cell count, automated method : 4
c. Number of platelet count, phase-contrast method : 136
d. Number of test, Partial thromboplastin time : 22
e. Number of test, Prothrombin time : 42

1.3 Virology

a. Detection of HB_s Ag and Anti HB_s

Sera from patients were examined for HB_sAg and Anti HB_s during January 1982 to March 1982

The results are shown in Table I

Sources of specimen	HB_sAg			Anti-HB_s		
	No. of specimen	No. of positive	Percentage	No. of specimen	No. of positive	Percentage
Patients	48	13	27.08	1	0	0

b. Serodiagnosis of DHF suspected patients

Six cases of recent DHF were detected among twenty five samples submitted during January 1982 - March 1982

2. Strengthening of the PHL as a public health laboratory

2.1 Examination of fecas for surveillance of diarrheal diseases

2.1.1 Number of specimen from PCMO & district hospitals : 241
Number of specimen positive for enteropathogens : 37
2.1.2 Number of specimen from Prapokklao Hospital : 1,720
Number of specimen for enteropathogens : 269

2.2 Bacteriologic examination of food and water

2.2.1 Water, number of specimen : 127
2.2.2 Food, number of specimen : 13

3. Strengthening of the SRL in the four district hospitals

The laboratory activities of four SRL during the period of three months are listed as follows :

3.1 TAMAI DISTRICT HOSPITAL

MICROBIOLOGY & Parasitology

- Gram stain-Pathogen	=	-
- Gram stain - G.C.	=	-
- AF stain - TB	=	-
- Blood parasitology-Malaria	=	860
- Stool parasitology-Protozao:Helminths	=	15

HAEMATOLOGY

- Haematocrit	=	220
- WBC count	=	215
- Diff. count	=	223
- Pregnancy test	=	45
URINE ANALYSIS	=	176

3.2 KLUNG DISTRICT HOSPITAL

MICROBIOLOGY & Parasitology

- Gram stain - Pathogens	=	19
- Gram stain - G.C.	=	19
- AF stain - TB	=	14
- Blood parasitology-Malaria	=	1,050

HAEMATOLOGY

- Haematocrit	=	254
- Haemoglobin	=	254
- WBC count	=	250
- Diff. count	=	262
URINE ANALYSIS	=	-

3.3 LAEMSINGHA DISTRICT HOSPITAL

MICROBIOLOGY & Parasitology

- Gram stain - Pathogens	=	9
- Gram stain - G.C.	=	5
- AF stain - TB	=	16
- Wet preparation - Fungi	=	3
- Blood parasitology-Malaria	=	187
- Stool parasitology-Protozoa : Helminths	=	35

HAEMATOLOGY

- Haematocrit	=	72
- Haemoglobin	=	53
- WBC count	=	36
- Diff. count	=	36
URINE ANALYSIS	=	69

3.4 PHONG NUM-RON DISTRICT HOSPITAL

MICROBIOLOGY

- Gram stain - Pathogens	=	26
- AF stain - TB	=	40
- Blood parasitology - Malaria	=	1,969
- Stool parasitology-Protozoa:Helminths	=	7

HAEMATOLOGY

- Haematocrit	=	25
- Haemoglobin	=	26
- WBC count	=	12
- Diff. count	=	12
URINE ANALYSIS	=	138

ACTIVITY II

Strengthening function of the Virus Research Institute (VRI)

1. Arbovirology.

1.1 Production and Standardization of arbovirus reagents.

1.1.1 Production of antigen

Dengue-2 SA antigen 239x0.5 ml.

1.1.2 Production of reference antisera.

-

1.2 Train personnel in the field of arbovirology.

-

1.3 Give assistance or advice to PHL Chantaburi.

-

2. Respiratory Viruses.

2.1 Sero-epidemiological survey of respiratory viruses in Chantaburi.

2.1.1 Survey in normal population in difference age group for antibodies to Influenza, Adeno and Respiratory Syncytial viruses.

Serum specimen are collecting.

Activity II Strongthoning function of the Division of Medical Entomology (DME).

1. Rodent study

1.1 Preliminary study of population density of urban rodent in Thamai.

The DME has had attempted to study the population density of urban rodents. Thamai is selected for this study. In November and December 1981 the study area was mapped and sampling sites were located. The study area is 20.7 hectares. inwhich there are 500 houses. 210 houses were selected by random sampling for placing wire live rodent traps. Three traps were placed in one house, 630 traps were placed per week, the traps were checked everyday and the captured animals were recorded and brought back to the laboratory for identification. The trapping were done continuously for 6 weeks then stopped two weeks and resumed again one more week. The number of animals collected during the last week was small and it was the end of budget period, the study was therefore temporary stopped. It will be resumed in the next season.

1.2 A study on the efficacy of different kinds of rodent traps.

The study was carried out at Nongbua village of 3.79 hectares with 104 houses, about 4 people/house. Thirty houses were randomly selected for traps placing in the kitchen. In one kitchen six kinds of traps, one each, were placed. Three live traps in one corner and three snap traps in another corner. The traps were placed every night for ten nights by changing the positions and animals collected every day. The results were statistically analysed.

Results

Live traps were more suitable for general trapping, especially Rattus exulans. Local wire live traps and local snap traps were more efficient than Japanese traps.

2. Mosquito vectors study

2.1 Seasonal prevalence of Culex vectors of Japanese B Encephalitis.

2.2 Seasonal prevalence of Aedes albopictus.

The DME staff have been working under the supevision of Japanese expert (Dr. Buei) studying the mosquito vectors 2.1, 2.2. The technical report is in the activity V.

ACTIVITY II

Strengthening function of the Division of Clinical Pathology (DCP)

1. Laboratory for Bacteriology

1.1 Serotyping of enteric pathogens from PHL chanthaburi :

Salmonella typhi	1
Other Salmonella	12
Shigella	112
E.coli	33
V.parahaemolyticus	69
Other	2
Total	229

1.2 Supply of antisera to Chanthaburi PHL :

Shigella	10	ml.
Salmonella	4	ml.
E.coli	14	ml.
Total	28	ml.

2. Laboratory for Parasitology

2.1 Angiostrongylus cantonensis found in the lungs

Area	No. examined	No. Pasitive
Thamai - Jan.	129	14
Feb.	217	8
March.	36	4
April.	-	-
Total	382	26 (=6.80%)

2.2 Endoparasites of rats that could be human infection

	No.examined	No.pasitive		
		Hn	Hd	Rs
Thamai - Jan.	129	-	20	2
Feb.	217	-	23	2
March.	36	-	2	2
April.	-	-	-	-
Total	382	-	45 (11.78%)	6 (1.57%)

Note: Hn = Hymenolepis nana

Hd = Hymenolepis diminuta

Rs = Raillietina Siriroji

ACTIVITY II

Strengthening function of the Division of Food Analysis (DFA)

1. In order to solve the analytical problems concerned with the analysis of coloring matter in food as well as speeding up the analytical work, liquid ion-exchange resin method was recommended.

2. Gas chromatographic method was introduced for the examination of volatile substances which migrate from various kinds of plastic food container.

3. Sixty-five samples of ice, supplied and drinking water from Chantaburi were analysed for safety. Three samples of water supply at school contain ammonia 0.225, 0.228 and 0.400 ppm. while the limited level is 0.1 ppm. It should be noticed that the organic substance may absorbed from the toilet which is located near the well.

Lead content of 0.10 ppm. was found in one sample of bottle water. The amount is quitely high, for drinking water should not contain lead more than 0.10 ppm.

Activity II

Strengthening function of the Division of Public Health Laboratory Services (DPHLS)

1. Supply

1.1 Chemical reagents have been supplied regulary to Chonburi Reginnal Health Lab. Chanthaburi P.H.L.

1.2 Bacteriological media and antisera have been supplied regulary to PHL Chonburi and Chanthaburi

2. Repairing Equipment

2.1 Equipment of PHL Chonburi have been repaired

2.2 Equipment of PHL Chanthaburi have been repaired

ACTIVITY III

Strengthening of Epidemiological Surveillance

Provincial Chief Medical Office, Chanthaburi (PCMO)

Mobile Medical Services

May 10, 1982 at Ban Sum Rong, Pong Num Ron District

Patient attention	160
Dental care	17

ACTIVITY IV

Training - None

ACTIVITY V

V-1 Operational research in Virology

V-1-1 Research on arbovirus infection in Chanthaburi area

Rubella virus

Production of rubella virus hemagglutinin in tissue culture was studied. The concentration of bicarbonate in tissue culture medium played an important role in the production of rubella virus hemagglutinin (HA). The production of rubella virus HA was stimulated by addition of excessive dose (0.56% - 0.7%) of bicarbonate. The result will be published in "Interim Report III".

V-1-2 Entomological and ecological studies on the arbovirus vector mosquito

Survey on adult mosquito

During January to March, mosquito collections were carried out at the five locations: Muang (municipality), Tagad Ngao, Laem Sing, Pak Nam Krachae and Makam, by using light traps.

A total of 25 species of mosquitoes were collected. The species composition varied by the collection sites. It was generally shown that the population densities of *Cultx tritaeniorhynchus* decreased markedly in dry season. However, *Culex gelidus* in Muang was abundant during the period from the latter half of the rainy season to the latter half of the dry season. *Cx. fatigans* was abundant in the dry season and scarce in the rainy season.

Survey on mosquito breeding

During January to March, a survey was made on mosquito breeding. A total of 15 species of mosquito larvae were collected. Total of 363 mosquito larvae, belonging 15 species, were found from 9 kinds of different habitats: Artificial container 3, Ground pool 2, Well 2, Rock pool 1, Pond 1. From Artificial container and Well, 6 species of mosquito larvae were found respectively. *Culex (Lophoceraomyia) sp. 36* from "Well" showed biggest number (109) and 82 of *Culex* sp.35 followed in the number of larvae in the same habitat. From Artificial container, 78 individuals of *Armigerea subalbatus* was the biggest and *Aedes aegypti* were found in the same breeding place.

These results will be reported in "Interim Report III".

Control of mosquito larvae in Makam district

Using monomolecular oil (ISA-2-OE), control study for *Anopheles* species have done at Makam from December, 1981 to January, 1982. Japanese expert in Medical Zoology consulted this work.

V-2 Analysis on causative agents of GI disease

V-2-1 Comparison of serotype between the year 1980 and 1981 in the isolates in Cholburi Hospital

Shigella - Number of isolates of each year were 81 and 59, respectively. In 1980, nearly half of them (38 - 46.9%) were *Shigella flexneri* 1b and *S. sonnei* (21 - 28.4%) followed. But in 1981, nearly 3/4 were *S. flexneri* 2a (43 - 72.9%) and *S. f.* 1b found only 8 cases (13.6%).

Salmonella - Total 74 isolates (belongs 13 species) were found in 1980, and 116 (belongs 16 species) in 1981. *S. krefeld* showed biggest number in each year, but rate of this species doubled in 1981 (77 - 66.4%) compared with 1980 (22 - 29.7%).

Vibrio - In 1980 total number of isolates was 246 and in 1981 it was 163, *V. parahemolyticus* (04:K8) showed biggest number in 1980 (22 - 13.5%) and in 1981 *V. parahemolyticus* (Out:Kut) found in biggest (33 - 13.4%).

Escherichia - Number of isolates for both year were 29 and 15, respectively. In 1980 *E. coli* (044:K74) found in biggest number (11 - 37.9%), but 1981 this type could not find at all.

About new type of *Vibrio* group (group F) survey started in Cholburi laboratory in this quarter.

V-2-2 Antibiotic resistant pattern of pathogenic bacteria in Cholburi district

Against 11 antibiotics (Chloramphenicol, Amikacin, Kanamycin, Tobramycin, Tetracycline, Ampicillin, Cafalotin, Carbenicillin, Colimycin, Gentamycin and Cotrimoxazol) antibiotic resistant pattern were checked for isolates bacteria in Cholburi district. *Shigella* (77), *Salmonella* (100) and *Escherichia coli* (108) showed very high resistance against Tetracycline, and to Chloramphenicol, Ampicillin, Cefalotin and Carbenicillin they have rather high resistance. But to Amikacin only some of *E. coli* showed some resistance and Tobramycin and Gentamycin were effective for these pathogens. For *V. parahemolyticus* (144) Tetramycin showed high effectivity but for Ampicillin, Carbenicillin and Colimycin they showed high resistance.

These results will be reported in "Interim Report III".

V-3 Operational research on community participation in health promotion.

V-3-1 Medical service

On 10th of January at Ban Sam Rong and 22nd of March at Tagad Ngao, medical service carried out and 54 and 165 persons attended for this service, respectively. The results of stool examinations at that time were as follows.

V-3-1-1 Bacteriological examination (Sam Rong)

No. of examination	No. of positive		% of positive
58	*P. shigelloides*	5	12.1%
	V. parahemolyticus	1	
	NAG vibrio + V. para.	1	

V-3-1-2 Parasitological examination

		No. of examinat.	No. of positive					% of positive
			Ev	To	HW	Ta	Op	
SamRong	Male	55		2	4	1		
	Female	36		1	4		1	
	Total	91		3	8	1	1	14.3%
TagadNaao	Male	34	1		1			
	Female	27			1			
	Total	61	1		2			4.9%

V-3-2 Water check

In February bacteriological and chemical examination continued on 44 samples from the same places with last progress report.
By the bacteriological examination from almost all samples (41/44 - 93.2%) some bacteria were found and Caliform bacteria were detected from one third of samples (23/44 - 36.4%). It should be rather important fact that *Salmonella* group F and *P. shigelloides* were found final water and well water used for drinking purpose. The results of chemical examination were not so serious. Almost all samples were under the limitation of Thai regulation, except one well water of preliminary school showed over high NH_3 value over than Thai regulation. These results showed in next two tables.

Results of bacteriological examination on water samples

1-2, February

	No. of examined	No. of samples some bacteria found	No. of samples Caliform found	Pathogen found
Final water	2	2 (10 - 26)	0	
Well water	5	5 (10 - 300)	3 (4 - 16)	*P. shigelloides*
Original water	3	0	0	
Final product	3	2 (5 - 1600)	1 (3)	
Treated water	4	4 (20 - 46)	2 (1 - 5)	
Ice	4	3 (41 - 280)	1 (2)	
Rain water	3	3 (10 - 100)	2 (8 - 14)	

22-23, February

Final water	2	2 (16 - 80)	1 (8)	
Well water	5	5 (LA - 66)	3 (1 - 4)	
Original water	2	2 (LA - 169)	0	
Final product	3	3 (LA - 570)	1 (20)	
Treated water	4	4 (LA - 90)	1 (2)	
Ice	4	4 (LA - 140)	1 (4)	

Results of chemical examination on water samples

		No. of exam.	pH	NH_3	NO_2	NO_3	$KMnO_4$	Solid	Hard-ness	Cl^-	F^-	Fe^{3+}	Pb^{2+}
1 - 3/Feb.	Final water	2	(6.20-6.65)	(0.009-0.010)	(ND)	(0.002-0.005)	(2.53-3.16)	(61- 66)	(6- 24)	(1.8-2.1)	ND	(0.25-0.30)	(0.01)
	Well water	5	(4.35-5.65)	(ND -0.228)	(ND -0.011)	(0.005-1.828)	(1.42-2.05)	(47-481)	(12-114)	(1.8-198.5)	ND	(0.04-0.20	(ND-0.08)
	Original water	3	(4.85-6.35)	(ND -0.034)	(ND -0.003)	(0.006-0.361)	(ND -2.21)	(43-176)	(12-156)	(2.5- 72.0)	ND	(ND -0.12)	(ND-0.08)
	Final product	3	(4.55-6.25)	(ND -0.013)	(ND -0.001)	(0.002-0.567)	(0.38-1.26)	(29-169)	(4-198)	(0.7- 88.6)	ND	(0.05-0.10)	(ND-0.09)
	Treated water	4	(5.35-6.65)	ND	(ND -0.002)	(0.006-0.309)	(0.79-2.84)	(14-109)	(12- 46)	(5.3- 12.4)	ND	(0.03-0.22)	(ND-0.01)
	Ice	4	(4.70-6.80)	(ND -0.119)	(0.001-0.003)	(0.009-0.134)	(2.53-56.88)	(10- 77)	(4- 77)	(2.5- 94)	ND	(0.03-0.15)	(ND-0.05)
	Rain water	3	(6.95-7.40)	(ND -0.010)	(0.001-0.002)	(0.005-0.013)	(1.42- 1.89)	(98-143)	(66-102)	(5.0-5.1)	ND	(0.01-0.06)	(ND)
22-24/Feb.	Final water	2	(6.70-7.00)	(0.058-0.063)	(0.002-0.003)	(0.003-0.016)	(1.74-3.32)	(49- 53)	(15- 21)	(ND-1.4)	ND	(0.05-0.08)	(ND)
	Well water	5	(4.40-5.65)	(0.013-0.400)	(ND -0.11)	(0.14 -0.540)	(ND -2.21)	(33-102)	(11- 97)	(4.6-197.3)	ND	(ND -0.18)	(ND-0.05)
	Original water	2	(5.00-6.85)	(0.029-0.052)	(0.001-0.002)	(0.051-0.076)	(1.74-2.21)	(51- 97)	(38- 59)	(6.4- 67.9)	ND	(0.06-0.17)	(0.03-0.10)
	Final product	3	(4.90-6.50)	(0.002-0.003)	(ND -0.001)	(ND -0.119)	(ND -1.42)	(11-100)	(4- 53)	(ND- 73.0)	ND	(ND-trace)	(ND-0.08)
	Treated water	4	(5.40-6.95)	(ND -0.073)	(0.001-0.003)	(0.004-0.417)	(1.42-2.69)	(77-230)	(10- 26)	(1.4-36.1)	ND	(0.01-0.05)	(ND)
	Ice	4	(5.30-6.65)	(ND -0.016)	(ND -0.001)	(ND -0.004)	(0.95-2.84)	(13-544)	(2- 15)	(ND- 7.1)	0.3	(ND-0.03)	(ND)
	Thai regulation		6.5 - 7.5	0.1	0.1	4	-	1,000	300	250	1.5	0.50	0.1
	Japanese regulation		5.8 - 8.6	ND	ND	3	3 - 5	200	100	30	0.8	0.07	0.1

V-3-3 Checking of Food Shops and Restaurants

As the target to be checked, 14 food shops and restaurants were selected and following samples were collected from each target :

1. Ice for drinks
2. Washing water (before use)
3. Rain water for drinking
4. Stool samples from workers.

V-3-3-1 Results of bacteriological examination

	No. of examin.	No. of samples positive for some bacteria	No. of samples Caliform found	No. of samples pathogen detected
Ice for drinks	14	14($1.0X10^1$-$1.0X10^3$)	1 ($2.0 X 10^2$)	0
Washing water	14	12($7.0X10^0$-$1.6X10^2$)	1 ($3.2 X 10^1$)	*P.shigelloides* 1 NAG vibrio 1
Rain water	1	1 ($1.0 X 10^3$)	1 ($5.0 X 10^2$)	0

V-3-3-2 Result of parasitological examination on stool samples

	No. of examined	No. of positive				% of positive
		Ss	HW	Tt	Cl	
Male	53		15			
Female	44	1	12	1	1	
Total	97	1	27	1	1	30.9 %

V-3-4 Village Medical Service News

In this quarter, "Village Medical Service News" No. 9 and No. 10 were published and distributed to sanitarians and midwives of Heal Centers in Chanthaburi Province and to communicators of project fields.

V-4 Researches in medico-zoological field in the model area.

In this quarter, some works of this field have been done, but results will be reported in next progress report.

V-5 To make researches in other related fields as necessary.

V-5-1 Hygienic surveys of plastics in Thailand

60 samples of palstic cup, dish, bowl, spoon, lunch box, ice cube tray etc. were surveyed from January to March in 1982. All of them were made of polyethylene or polypropylene, and migration test was carried out according to the Japanese Food Sanitation Law for plastic container. Results showed that they had no problems for consumption of potassium permanganate and heavy metals, but there was some problems for volatile residue. When water was used as eluting solvent, 19 samples (31.7%) were over limit, and 4% acetic acid was used as eluting solvent, 16 samples (26.7%) were over limit. It means that the plastics seemed to contain large amount of additives, such as increasing agent, antioxydant, plasticizer etc.

V-5-2 Determination of coloring matters in dried shrimp and shrimp paste

Using new method which used by liquid anion exchange resin (Amberlite LA-2), 21 samples of dried shrimp and 37 samples of shrimp paste were surveyed. These results showed that 3 samples of dried shrimp (14.3%) contained Orange II or Rhodamine B and 13 samples of shrimp paste (35.1%) contained Rhodamine B. These colors are not permitted as food-color in Thailand as well as in Japan, therefore they should confirm spectro-photometric after eluting colors from paper developed.

These results will be published in "Interim Report III".

Progress Report No. II

Project : Promotion of Provincial Health Services

April - June 1981

The progress of the project's activity during this period was not so remarkable due to the delay constitution of the new Japanese expert team by the project has been extended for another three more years and the Japanese expert team has replaced all members for this extended period.

I. Expert

1.1 Mr. Masaaki Tsuno, expert on Bacteriology, arrived on 15 April 1981 and will work for the project 1 year.

1.2 Dr. Kazuo Buei, long term expert on Medical Entomology, arrived on 19 May 1981 for 2 years duration.

1.3 Dr. Eiji Marui, expert on Public Health, arrived on 19 May 1981 and will serve the project until 18 November 1981.

II Project's activity

2.1 Activity I

2.1.1 Strengthening of the PHL as a clinical diagnostic laboratory

1. Clinical chemistry

The same lot of lyophilized sera, designated as "Consera" was used to run for the internal quality control during April 1981 to June 1981.

The results are shown in Table 1.

TABLE I

	N	X	X	Mean	S.D.	C.V.
Blood urea nitrogen	48	879.1	161840	18.31	1.29	7.04
Creatinine	47	69.1	102.69	1.47	0.152	10.3
Sugar	47	4265.2	393151,34	90.75	11.38	12.5
Total Protein	45	291.84	1896.97	6.48	0.309	4.76
Albumin	45	164.36	602.618	3.65	0.226	6.19
Cholesterol	48	8609	1558603	179.3	17.56	9.73
Total bilirubin	45	22	11.495	0.489	0.128	26.2
Sodium	42	5496	719450	130.8	2.484	1.9
Potassium	43	190.2	842.98	4.42	0.197	4.46
Chloride	45	4423	435073	98.29	2.753	2.80
SGOT	47	1076	25148	22.89	3.308	14.4
SGPT	47	626	8984	13.32	3.708	27.8
Alkaline phosphatase	48	1183	30629	24.46	5.539	22.6

2. Clinical Hematology

a. Number of white blood cell count, automated method : 6974

b. Number of red blood cell count, automated method : 3

c. Number of platelet count, phase-contrast method : 630

d. Number of test, Partial thromboplastin time : 19

e. Number of test, Prothrombin time : 15

3. Virology

a. Detection of HBs Ag. and Anti HBs

Sera from healthy individuals and patients were examined for HBs Ag., and Anti HBs during the three-month period, April-June 1981. The results are shown in Table II.

TABLE II

Sources of specimen	Total Number of specimen examined	Positive for HBs Ag.		Positive for Anti HBs	
		No. of specimen	Percentage	No. of specimen	Percentage
1. Patient with Diagnosis of viral hepatitis	18	6	33.33	2	11.11
2. Patient with Blood donors CA liver Cirrhosis	114	19	16.66	26	22.80
3. Healthy individual Patients	7	2	28.57	2	28.57

b. Serodiagnosis of DHF suspected patients

Two cases of recent DHF were discovered among 19 cases examined serologically, constituting 10.52 percent.

2.1.2 Strengthening of the PHL as a public health laboratory

1. Examination of feces for surveillance of diarrheal diseases

1.1 Number of specimen from PCMO and district hospital : 72

Number of specimen positive for enteropathogens : 29

1.2 Number of specimen from Prapokklao Hospital : 1,296

Number of specimen positive for enteropathogens : 306

2. Bacteriologic examination of food and water

2.1 Water, number of specimen : 6

2.2 Food, number of specimen : 1

2.1.3 Strengthening of the SRL in the four district hospitals

The laboratory activities of four SRL during the period of three months are listed as follows :

1. TAMAI DISTRICT HOSPITAL

1.1 MICROBIOLOGY

- Gram stain-Pathogens = 1
- Gram stain-G.C. = 1

- AF stain-TB = 1
- Blood parasitology-Malaria = 1,329
- Stool parasitology-Protozoa:Helminths = 36

1.2 HAEMATOLOGY

- Haematocrit = 610
- Haemoglobin = 4
- WBC count = 630
- Diff. count = 625
- Pregnancy test = 27
- VDRL = 73

1.3 Urine analysis = 194

2. KLUNG DISTRICT HOSPITAL

2.1 MICROBIOLOGY

- Gram stain-Pathogens = 9
- Gram stain-G.C. = 8
- AF stain-TB = 25
- Blood parasitology-Malaria = 600
- Stool parasitology-Protozoa:Helminths = 15

2.2 HAEMATOLOGY

- Haematocrit = 277
- Haemoglobin = 277
- WBC count = 239
- Diff. count = 237
- VDRL = 144
- Pregnancy test = 99

2.3 Urine analysis = -

3. LAEMSINGHA DISTRICT HOSPITAL

3.1 MICROBIOLOGY

- Gram stain-Pathogens = 7
- Gram stain-G.C. = 7
- AF stain - TB = 6

- Wet preparation-Fungi = 6
- Blood parasitology-Malaria = 229
- Stool parasitology-Protozoa:Helminths = 8

3.2 HAEMATOLOGY

- Haematocrit = 94
- Haemoglobin = 72
- WBC count = 49
- Diff. count = 19

3.3 URINE ANALYSIS = 178

4. PHONG NUM RON DISTRICT HOSPITAL

4.1 MICROBIOLOGY

- Gram stain-Pathogens = 19
- Gram stain-G.C. = 3
- AF stain-TB = 4
- Blood parasitology-Malaria = 2,287
- Stool parasitology-Protozoa:Helminths = 11

4.2 HAEMATOLOGY

- Haematocrit = 67
- Haemoglobin = 35
- WBC count = 34
- Diff. count = 34
- Pregnancy test = 13
- VDRL = 21

4.3 URINE ANALYSIS = 156

2.2 Activity II

2.2.1 DPHLS

Chemical reagents, bacterilogical media and antisera have been supplied regularly to PHL Chanthaburi and Chonburi during April to June 1981.

2.2.2 DFA

In following up the survey of food for safety, sixty eight samples of food, beverage, drinking water, food - color and drinking straw for a total of 68 samples were collected from Chantaburi province between March 23 - 25, 1981. Analysis results showed that the manufacturing practices are not good enough. Their products are not safe for human consumption such as :

- Drinking straw samples from 4 producers in Chantaburi has high residuals from volatilation.

- About 43 % of peanut and bean product samples were found over safety limit (20 ppb).

- Each sample of dried shrimp contains non-permitted food color.

- Ten samples of drinking water were analysed for microbiological aspects. Each sample did not meet the standard of drinking water.

- It is noticed that eight samples of fish sauce collected are fit for consumption.

2.2.3 VRI

Sero-epidemiological surveys of arbovirus in Chanthaburi.

The analysis of the results in serological examination of sera collected from Chanthaburi in 1980, are being under taken.

2.2.4 DME

During the months of April to June 1981, the DME carried out Aedes aegypti campaine to prevent DHF out break in six districts of Chanthaburi province. The Aedes aegypti densities pre and post Abate and Malathion applications were monitored. After the pesticide applications the adult density was reduced 64 % in the municipality and 83 % to 94 % in Thamai and Khlung district. Details in the tables 1 and 2.

Total localities treated were 18, total number of houses was 8139 to cover 51,602 population. Details are given in the Tables 3A to 4C.

TABLE 1 RESULTS OF AEDES AEGYPTI LANDING COLLECTION PRE AND POST ABATE 3% AND SUMITHION 50% APPLICATION IN CHANTHABURI PROVINCE (MAY - JUNE 1981)

Date	Location	Landing rate (No./man-hour)			No. of houses (20 min./h.)	% Female Reduction
		Female	Male	Total		
20/5/81	Municipality	2.25	1.0	3.25	36	-
21-24/5/81		Abate application				
8-9/6/81		Sumithion application				
25/6/81		0.8	0.7	1,5	35	64,4
26/5/81	Thamai	4.8	2.3	7.1	30	-
27/5/81		Abate application				
15/6/81		Sumithion application				
26/6/81		0.8	0.4	1.2	30	83.3
5/6/81	Khlung	4.9	1.5	6.4	30	-
6/6/81		Abate application				
12/6/81		Sumithion application				
27/6/81		0.3	0.1	0.4	30	93.9

TABLE 2 RESULTS OF VISUAL LARVAL SURVEYS IN CHANTHABURI PROVINCE (MAY - JUNE 1981).

Locations	Municipality				Thamai				Khlung			
Date (1981)	20/5	21-4/5	8-9/6	25/6	26/5	27/5	15/6	26/6	5/6	6/6	12/6	27/6
Days after Abate 3% Application	-	Abate Application		30	-	Abate Application		30	-	Abate Application		21
Days after Sumithion 50% Application	-		Sumithion Application	17	-		Sumithion Application	11	-		Sumithion Application	15
No. houses examined	180			180	120			120	150			150
No. houses positive	113			33	103			36	105			10
Aedes House Index	62.8			18.3	85.8			30.0	70.0			6.7
No. containers examined	936			921	887			772	851			783
No. containers positive	193			36	365			62	270			12
Receptacle Index	20.6			3.9	41.1			8.0	31.7			1.5
Breteau Index	107.2			20.0	304.2			51.7	180.0			8.0
Total outdoor containers	101			118	209			211	162			101
% positive outdoors	30.7			11.0	39.7			14.7	34.6			2.9
Total indoor containers	835			803	678			561	689			682
% positive indoors	19.4			2.9	41.6			5.5	31.1			1.3

TABLE 3A SUMMARY OF ABATE APPLICATION IN CHANTHABURI PROVINCE (MAY - JUNE 1981).

Date Treated	Area		No.Houses in Treated area	No.Houses Treated		No. Houses Untreated		Total Container in Treated House	No. of Containers				Amt. Abate used		Amt. Abate given to house owners (gm.)
									Treated			Untreated			
	Amphur	Community		Completely (%)	Partially (%)	Locked (%)	Refused (%)		Water Container (%)	Ant guard (%)	Miscellaneous (%)	(%)	Kg.	g./house	
21-24/5/81	Muang	Municipality	3,022	1,491 (49.3)	660 (21.8)	689 (22.8)	182 (6.0)	10,971	4,931 (44.9)	1,763 (16.1)	2,889 (26.3)	1,388 (12.7)	46.71	21.7	3,270.1
25/5/81		Chantanimit	1,028	548 (53.3)	234 (22.8)	195 (19.0)	51 (4.9)	4,261	2,088 (49.0)	644 (15.1)	1,028 (24.1)	501 (11.8)	20.84	26.6	524.7
2/6/81		Ban Nong-Bua	121	61 (50.4)	40 (33.1)	17 (14.0)	3 (2.5)	1,297	906 (69.9)	134 (10.3)	78 (6.0)	179 (13.8)	5.8	57.4	137.8
28/5/81		Khao Raya	93	66 (70.9)	6 (6.5)	17 (18.3)	4 (4.3)	473	248 (52.4)	24 (5.1)	176 (37.2)	25 (5.3)	3.4	47.2	190.8
28/5/81		Ban Noen-Soung	65	44 (67.7)	3 (4.6)	13 (20.0)	5 (7.7)	277	167 (60.3)	38 (13.7)	68 (45.5)	4 (1.4)	2.16	45.9	1,468.1
27/5/81	Thamai	Thamai	623	290 (46.5)	78 (12.5)	210 (33.7)	45 (7.2)	2,180	1,101 (50.5)	384 (17.6)	493 (22.6)	202 (9.3)	10.17	27.6	614.8
28/5/81		Bangacha	166	78 (47.0)	40 (24.1)	31 (18.7)	17 (10.2)	844	476 (56.4)	96 (11.4)	162 (19.2)	110 (13.0)	3.95	33.5	190.8

TABLE 3B SUMMARY OF ABATE APPLICATION IN CHANTHABURI PROVINCE (MAY - JUNE 1981).

Date Treated	Area		No. Houses in Treated area	No. Houses Treated		No. Houses Untreated		Total Container in Treated House	No. of Containers				Amt. Abate used		Amt. Abate given to house owners (gm.)
	Amphur	Community		Completely	Partially	Locked	Refused		Treated			Untreated	Kg.	g./house	
									Water Container (%)	Ant guard (%)	Miscellaneous (%)	(%)			
1/6/81		Na-Yai-Arm	187	121 (64.7)	45 (24.1)	17 (9.1)	4 (2.1)	970	425 (43.8)	144 (14.8)	291 (30.0)	110 (11.4)	7.2	43.1	662.5
1/6/81		Ban Nong-Kla	154	113 (73.4)	19 (12.3)	21 (13.6)	1 (0.5)	562	352 (62.6)	61 (10.9)	117 (20.8)	32 (5.7)	2.8	21.2	31.8
1/6/81		Ban Huay-Sa-Ton	105	66 (62.8)	13 (12.4)	23 (21.9)	3 (2.3)	492	252 (51.2)	64 (13.0)	146 (29.7)	30 (6.1)	1.5	19.0	90.1
3/6/81	Laemsing	Ban Pliu	209	105 (50.2)	50 (23.9)	50 (23.9)	4 (2.3)	920	443 (48.7)	152 (16.5)	217 (23.6)	103 (11.2)	5.4	34.8	53.0
4/6/81		Nong-Chim	373	303 (81.2)	60 (16.1)	9 (2.4)	1 (0.3)	3,034	2,509 (82.7)	66 (2.2)	319 (10.5)	140 (4.6)	19.55	53.9	1,033.5
5/6/81		Koa Perid	156	74 (47.4)	51 (32.7)	26 (16.7)	5 (3.2)	1,163	656 (56.4)	28 (2.4)	203 (17.5)	276 (23.7)	3.35	53.2	249.1
2/6/81	Makham	Makham	218	143 (65.6)	26 (11.9)	47 (21.6)	2 (0.7)	1,149	675 (58.7)	186 (16.2)	229 (19.9)	59 (5.2)	6.0	35.5	524.7

TABLE 3C SUMMARY OF ABATE APPLICATION IN CHANTHABURI PROVINCE (MAY - JUNE 1981).

Date Treated	Area		No.Houses in Treated area	No. Houses Treated		No. Houses Untreated		Total Container in Treated House	No. of Containers				Amt. Abate used		Amt.Abate given to house owners (gm.)
	Amphur	Community		Comple-tely (%)	Partially (%)	Locked (%)	Refused (%)		Treated			Untreated (%)	Kg.	g./house	
									Water Container (%)	Ant guard (%)	Miscel-laneous (%)				
6/6/81	Khlung	Khlung	927	515 (55.6)	214 (23.1)	167 (18.0)	31 (3.3)	4,068	1,967 (48.4)	540 (13.3)	1,158 (28.4)	403 (9.9)	16.84	23.1	832.1
	Pong-Nam Ron	Ban Tab-Sai	114	79 (69.3)	8 (7.0)	25 (21.9)	2 (1.8)	541	324 (59.9)	52 (9.6)	145 (26.3)	20 (3.7)	3.64	41.8	371.0
18/6/81		Ban Ta-Moon	133	98 (73.7)	5 (3.8)	30 (22.5)	-	508	351 (69.1)	48 (9.4)	101 (19.9)	8 (1.6)	3.94	38.3	42.4
18/6/81		Ban Pa-Thong	445	307 (69.0)	54 (12.1)	76 (17.1)	8 (1.8)	1,937	1,375 (71.0)	72 (3.7)	376 (19.4)	114 (5.9)	18.4	50.96	323.3
Total 18 Locations			8,139	4,502 (55.3)	1,606 (19.7)	1,663 (20.4)	368 (4.5)	35,647	19,251 (54.0)	4,496 (12.3)	8,196 (23.0)	3,704 (10.4)	171.65	28.10	10,610.6

TABLE 4A SUMMARY OF ADULTICIDING (SUMITHION 50%) IN CHANTHABURI PROVINCE (MAY - JUNE 1981).

Date Treated	Area		Total No. Houses	Total Population*	Amt. of Insecticide Used		Total Insecticide Used (ml.)	Insecticide Applied per House (ml./house)
	Amphur	Community			Leco-HD. (lit.)	Mist-Blower (lit.)		
8-9/6/81	Muang	Municipality	3,022	19,160	25.000	26.000	51,000	16.88
10/6/81		Chantanimit	1,028	6,518	7.000	13.190	20,190	19.64
16/6/81		Ban Nong-Bua	121	767	4.000	1.525	5,525	45.66
14/6/81		Khao Raya	93	590	-	3.550	3,550	38.17
14/6/81		Ban Noen-Soung	65	412	-	2.175	2,175	33.46
15/6/81	Thamai	Thamai	623	3,950	13.000	600	13,600	21.83
15/6/81		Bangacha	166	1,052	6.000	1.800	7,800	46.99

TABLE 4B SUMMARY OF ADULTICIDING (SUMITHION 50%) IN CHANTHABURI PROVINCE (MAY - JUNE 1981).

Date Treated	Area		Total No. Houses	Total Population*	Amt. of Insecticide Used		Total Insecticide Used (ml.)	Insecticide Applied per House (ml./house)
	Amphur	Community			Leco-HD. (lit.)	Mist-Blower (lit.)		
17/6/81		Na-Yai-Arm	187	1,186	3.000	1.900	4,900	26.20
17/6/81		Ban Nong-Kla	154	976	4.000	0.755	4,755	30.88
17/6/81		Ban Huay-Sa-Ton	105	666	-	2.950	2,950	28.09
22/6/81	Laemsing	Ban Pliu	209	1,325	-	5.300	5,300	25.36
22/6/81		Nong-Chim	373	2,365	-	13.550	13,550	36.33
23/6/81		Koa Perid	156	989	-	4.700	4,700	30.13
16/6/81		Makham	218	1,382	5.000	1.725	6,725	30.85

TABLE 4C SUMMARY OF ADULTICIDING (SUMITHION 50%) IN CHANTHABURI PROVINCE (MAY - JUNE 1981).

Date Treated	Area		Total No. Houses	Total Population*	Amt. of Insecticide Used		Total Insecticide Used (ml.)	Insecticide Applied per House (ml./house)
	Amphur	Community			Leco-HD. (lit.)	Mist-Blower (lit.)		
12/6/81	Khlung	Khlung	927	5,877	7.500	11.850	19,350	20.87
19/6/81	Pong-Nam-Ron	Ban Tab-Sai	114	723	-	2.410	2,410	21.14
19/6/81		Ban Ta-Moon	133	843	-	2.860	2,860	21.50
19/6/81		Ban Pa-Thong	445	2,821	-	12.265	12,265	27.56
Total 18 Locations			8,139	51,602	74.500	109.105	183,605	22.56

* Calculated from 6.34 persons/house

From Ministry of Interior (1981)

Total Population in Chanthaburi	330,610
Number of Houses	52,171
Av. Number persons/House	6.34

2.2.5 DCP

Report on Bacteriological Works

a. Forty specimens were received from PHL Chanthaburi for typing as follows :

Salmonella	22
Shigella	10
E.coli	6
Others	2

b. Supply of antisera to PHL Chanthaburi

Salmonella	25 ml
Shigella	5 ml
EPEC	15 ml

2.2.6 Cholburi

1. Cholburi Hospital

	April	May	June
1. Bacteriological examination	3,342	2,093	3,255
2. Serological examination	1,048	1,195	1,396
3. Parasitological examination	5,390	5,494	5,722
4. Mycological examination	283	410	358
5. Haematological examination	8,764	10,812	11,397
6. Clinical Chemistry examination	4,114	4,373	4,238
7. Spinal Fluid examination	338	413	308
8. Urine examination	4,478	4,283	4,602
9. Sanitation	-	-	-
10. Detection for Hepatitis B Antigen	28	52	14
11. Determination of Protein Fraction	-	7	5
12. Rabies diagnosis by Fluorescent	15	27	28
13. Hemoblobin Typing	3	8	10
14. Others (media prep. etc.)	139,807	114,604	278,014

2. Panatnikom District Hospital

	April	May	June
1. Blood film for Malarial	378	409	541
2. Complete blood count	378	409	541
3. Blood Chemistry	104	106	148
4. Blood for VDRL	147	116	140
5. Blood for Serology test	50	62	82
6. Stool Examination	57	62	79
7. Urine Examination	1039	694	1632
8. Microbiology	120	123	199
9. Bleeding Donor/Blood Transfusion	40/47	33/54	19/70

3. Banglamung District Hospital

	April	May	June
1. Sputum examination	20	9	18
2. Gram stain	78	72	102
3. Blood Flim for Parasites	123	110	160
4. Pregnancy test	43	41	49
5. Urine examination	315	406	326
6. Complete Glood count	64	70	80
7. Hematocrit	109	116	148
8. Stool examination and culture	6	2	16
9. Rectal Swab	12	5	10
10. F.B.S.	17	14	19
11. B.O.N.	8	4	2
12. Creatinine	7	2	2
13. Uric Acid	-	-	-
14. Cholesterol	2	3	2
15. Protein	3	2	3
16. Bilirubin	4	2	2
17. S.G.O.T., S.G.P.T.	8	4	4
18. Blood Grouping	17	22	20
19. Volunteer Donor	12	5	13
20. Cross matching	10	5	14
21. Widal Agglutination	1	1	5
22. Amylase	-	-	-
23. V.D.R.L.	106	125	172

4. Ban Bung District Hospital

		April	May	June
1.	Blood for malaria	207	245	258
2.	V.D.R.L.	36	30	69
3.	Stool Examination	56	47	68
4.	Urine Examination	102	89	136
5.	Complete blood count	101	104	159
6.	Acid fast Bacilli	12	1	8
7.	Gram Stain	8	7	20
8.	Widal Teat	7	12	13
9.	Blood Sugar	-	6	2

2.3 Activity III

As there were some replacements of the Japanese team of expert during the period so no progress of activities have been reported. Any how the Activity Manager and the Japanese experts have decided to send the medical mobile team to the model area in every two months.

2.4 Activity IV

No training activity was performed during this period.

2.5 Activity V

2.5.1 Operational research in Virology

1. Research on arbovirus infections in Chanthaburi area

1.1 Seroepidemiological survey on arbovirus infection :

On this subject, there are none results, from the reason of replacement of Japanese experts.

1.2 Entomological and ecological studies on the arbovirus vector mosquitoes :

During the period 25, May - 30, June, a survey was made on mosquito breeding in Chanthaburi Province to determine the mosquito fauna in the area and the vector species for Denque Hemorrhagic Fever and Japanese Encephalitis.

A total of 12 species of mosquitoes were collected. Species, numbers of individuals and breeding sites are shown in Table 1. Aedes aegypti, the principal vector of Denque Haemorrhagic Fever was the dominant species are breeding in the domestic containers in close associate to house of human beings in all localities in Chanthaburi.

1.3 Epidemiological tracing of DHF cases :

In this first quarter period, outbreak of DHF is not confirmed in our project fields.

Table 1. Number of occurrences of mosquito larvae

Species	Breeding Sites (Number observed)				
	Ground pool* (3)	Artificial container** (28)	Bamboo (3)	Rock pool (2)	Total (36)
Aedes aegypti		369	1		370
A. albopictus		150	37		187
A. gardnerii imitator			6		6
A. togoi				34***	34
Culex fatigans		112			112
C. fuscocephala		8			8
C. alis	6				6
C. murelli				8	8
C. mimulus	3				3
Armigeres subalbatus	21				21
Tripteroides aranoides			8		8
Toxorhynchites splendens		2			2
Total	30	641	52	42	765

* Swamp, Puddle, Shallow pool

** Water Pot, Drum, Tire, Concrete Block

*** Seashore

2. Analysis on causative agents of GI diseases

2.1 Microbiological research for GI diseases in Chanthaburi :

In these three months, 1,368 fecal specimens of diarrheal cases from in- and out-patients of Prapokklao Hospital and district hospitals in Chanthaburi province were examined for bacterial pathogens.

Pathogenic bacteria were isolated from 313 cases (22.9%). The strains which were isolated in these cases were; 2 of NAG vibrio, 59 of *Shigella*, 40 of *Salmonella*, 90 of *V. parahaemolyticus*, 97 of *E.coli* and 37 of *P. shigelloides* (See Table 2)

Beside routine works mentioned above, on the specimen collected on every tuesday, special works to detect pathogenic bacteria have done. Total number of such specimens were 103, and 43 of them (41.7%) were pathogen positive. The isolates from these specimen were; 6 strains of *Shigella*, 3 of *Salmonella*, 34 of *E. coli*, 8 of *V. parahaemolyticus* and 4 of *P.shigelloides*. (Table 3)

2.2 Parasitological research for GI diseases in Chanthaburi :

On 9th of April (Ban Bo) and on 26th of May (Ban Sam Rong), whole inhabitants medication against parasites were conducted. Effectivity of these medication are now in progress.

Table 2. Isolation of Enteropathogenic Bacteria from Fecal Specimens of Diarrheal Cases among In- and Out-Patients of Prapokklao Hospital and District Hospitals in Chanthaburi (April - June, 1981)

Month	Number of specimens examined	No. of Pathogen Positive Cases (%)	Number of isolates	Pathogen													
				V.cholerae		*Shigella*				*Salmonella*		*V.para.*	*E. coli*		*Group F*	*P. shigel.*	
				O-1	NAG	A	B	C	D	T.G.	Others		I-III	IV,V			
April	399	84(21.1%)	93	-	-	-	14	-	9	-	12	21	20	8	-	9	
May	470	82(17.4%)	84	-	-	-	11	1	1	-	21	28	9	1	-	12	
June	499	147(31.7%)	158	-	2	3	7	1	12	-	7	41	58	11	-	16	
Total	1368	313(22.9%)	305	-	2	3	32	2	22	-	40	90	87	20	-	37	

* T.G. - Typhoid group, *V.para.* - *Vibrio parahaemolyticus*, *P.shigel.* - *Plesiomonas shigelloides*.

Table 3. Isolation of Enteropathogenic Bacteria from Fecal Specimens of Diarrheal Cases among In- and Out-Patients of Hospitals in Chanthaburi on every Tuesday (June, 1981)

Date	Number of Specimens examined	No. of Pathogen Positive Cases (%)	No. of isolates mixed Infect.	Pathogen									
				V. cholerae		*Shigella*	*Salmonella*	*V.para-haemo.*	*E.coli*	*Campylo-bactor*	*Group F*	*P.shi-gelloi.*	*Aero-monas.*
				O-1	NAG								
June 2	21	8(38.1%)	10 (2)	-	-	3	1	1	5	-	-	-	-
9	22	9(40.9%)	11 (2)	-	-	1	-	1	8	-	-	1	-
16	22	12*(54.5%)	15 (2)*	-	-	1	1	-	13	-	-	-	-
23	13	6*(46.2%)	9 (2)*	-	-	-	1	3	3	-	-	2	-
30	25	8(32.0%)	10 (2)	-	-	1	-	3	5	-	-	1	1
Total	103	43(41.7%)	55 (10)	-	-	6	3	8	34	-	-	4	-

V.parahaemo. - *Vibrio parahaemolyticus*, *P.shigelloi* - *Plesiomonas shigelloides*

* Including one case of mixed infection by three kinds of pathogen.

3. Operational research on community participation in health promotion.

3.1 Research on the actual conditions of volunteers in project fields:

For accomplishing the need to promote our project, research on the actual conditions of volunteers in the project fields was conducted. As control, same number of volunteers who are working in villages of other Amphur were selected, and for 76 volunteers totaled questionair survey was done by using "enquete" method. This research conducted on the following items : Age, Sex, Native Place, Occupation, School, Carrier, Sphere, Position in village, Working Time and Understanding about Medical Situation of their own Villages. Results will be published in the near future.

3.2 Making Family Based File-System:

Results of research works in different fields of our project for past five years were kept separatedly. To remove inconveniences for utilization the data of past research, family based fily-system was organized from June. This system will be completed by this November. It was found from data of medical examinations done last year that people who came medical examinations twice were not so many. The results was shown in Fig. 1.-Fig 6.

3.3 Monthly Checking of Water and Ice for General Uses :

21 Samples of drinking water and 3 of ice for general uses were checked for bacteriologically. These samples were collected from 2 places of water supply, 3 public wells, 4 drinking water factories, 3 water containers for rain water and 4 ice factories.

Total bacterial counts, detection of coliform bacteria and *E.coli* were tried, and coliform bacteria was detected from 2 samples of rain water, and *P. shigelloides* was isolated from three samples of water. Results show in Table 4.

3.4 Publishing of Monthly "Village Medical Service News" :

Baside research works, for the purpose of education of medical officers and volunteers in project fields, "Village Medical Service News" was published monthly, from April (No. 3) to June (No. 5). These printed are the news for scientific knowledge and results of laboratory works.

4. Research in food science

As delay of expert arriving in this field, there are no data about this subject in this quarter at all.

5. Research in Medical Zoology

Man power for this research ceded for mosquito control works in Chanthaburi district, so Rodent survey in Chanthaburi area has not done in this quarter period.

Table 5. Results of Bacteriological Checking of Water and Ice. (June, 1981)

Target No.	Sample	Results					
		Total B.C.	*E.coli*	Coliform	Ph	Cl-	Pathogen
T 1	Final water	12	-	-	6.5	-	*P.shigel.*
T 2	Final water	60	-	-	6.2	-	-
T 5	Well water	3	-	-	6.0	-	*P.shigel.*
T 6	Original water	-	-	-	6.0	-	-
T 6	Final product	50	-	-	7.2	-	-
T 9	Original water	80	-	-	7.0	-	-
T 9	Final product	-	-	-	6.9	-	-
T10	Rain water	30	-	+*	7.4	-	-
T11	Rain water	20	-	+*	7.4	-	-
T12	Rain water	100	-	-	7.6	-	-
T13	Treated water	-	-	-	6.0	0.5	-
-	Well water	20	-	-	6.0	-	*P.shigel.*
T 3	Well water	57	-	-	6.0	-	-
T 4	Well water	130	-	-	6.0	-	-
T 7	Original water	21	-	-	6.0	-	-
T 7	Final product	5	-	-	6.0	-	-
T 8	Original water	25	-	-	7.6	-	-
T 8	Final product	22	-	-	7.6	-	-
T14	Treated water	1	-	-	6.1	-	-
T15	Treated water	200	-	-	6.0	-	-
T16	Treated water	210	-	-	6.0	-	-
T13	ice	NT	NT	NT	NT	NT	NT
T14	ice	27	-	-	6.4	-	-
T15	ice	2	-	-	6.9	-	-
T16	ice	12	-	-	6.3	-	-

T1,2 = Water supply; T3,4,5 = Public well; T6,7,8,9 = Drinking water factory
T10,11,12 = Water container for rain water; T13,14,15,16 = Ice factory

Total B.C. = Total bacterial counts per gram.
Cl- = by p.p.m. NT = Not treated
+* = Detected Enterobacter *P.shigel.*=Detected *Plesiomonas shigelloides*

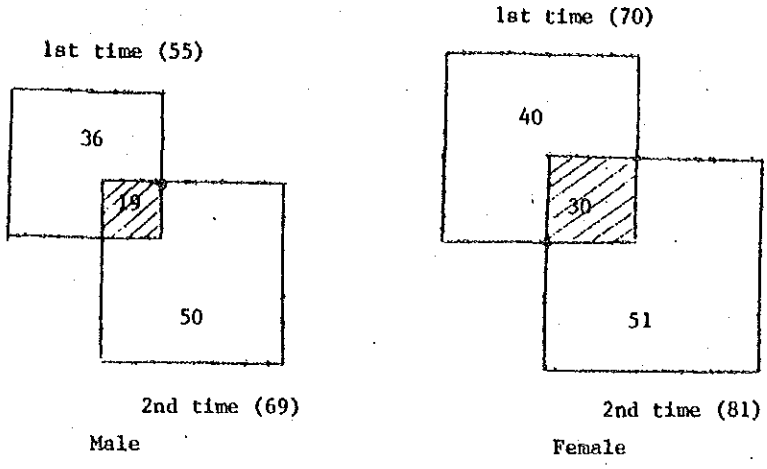


Fig.1 Number of Visitor; Tagad Ngao V4

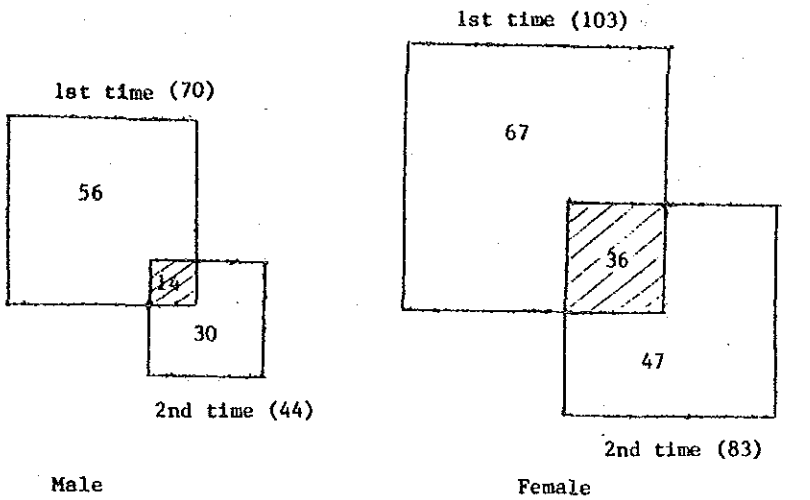


Fig. 2 Number of Visitors; Bo V3

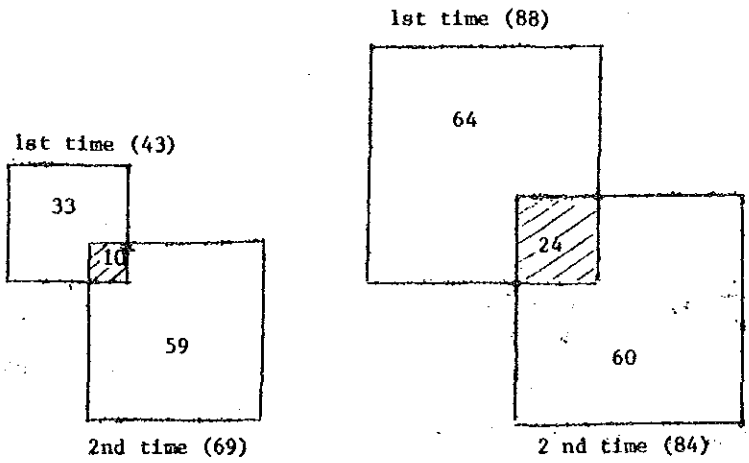
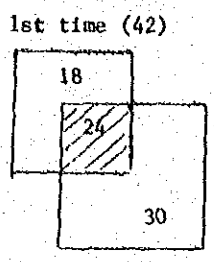


Fig.3 Number of Visitors; Saikao V2

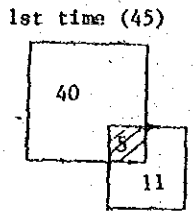


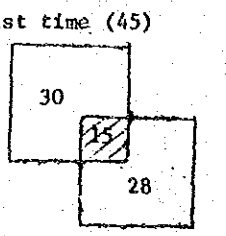
No Data

Male

Female

Fig.4 Number of Visitors; Saikaa V8

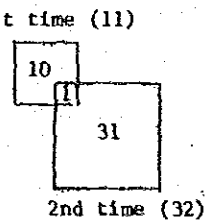


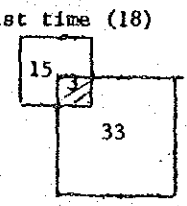


Male

Female

Fig.5 Number of Visitors; Toong Bencha V1





Male

Female

Fig.6 Number of Visitors; Toong Bencha V3

30 June 1981

Megumi Hasegawa, Ph.D.

Japanese Expert Team Leader

Sutas Guptarak, M.D.

Project Director

PROGRESS REPORT III

Project: Promotion of Provincial Health Services

July - September 1981

In the second quarter of the extended first year of our project, three new Japanese experts have joined and started their new activities in the fields of virology and food analysis. These three experts are :

Dr. Homu Itoh, expert in virology, arrived on 3 July 1981 and will stay for two years.

Dr. Yasuhide Tonogai, expert on food analysis, arrived on 5 August 1981 and will stay for one year.

Miss Tamano Seki, expert on food science, arrived on 5 August 1981 and stayed one month.

Results of each activity during this period is as follows :

PROGRESS REPORT

(JULY 1981 - SEPTEMBER 1981)

ACTIVITY I

I. Strengthening of the PHL as a clinical diagnostic laboratory

1. Clinical chemistry

The internal quality control programme, under the support of the Project for Promotion of Provincial Health, has been discontinued since July 1981 due to lack of supply of control sera,

2. Clinical Hematology

a. Number of white blood cell count, automated method : 6707
b. Number of red blood cell count, automated method : -
c. Number of platelet count, phase-contrast method : 447
d. Number of test, Partial thromboplastin time : 23
e. Number of test, Prothrombin time : 44

3. Virology

a. Detection of HBs Ag and Anti HB_S

Sera from patients were examined for HB_SAg and Anti HB_S during July 1981 to September 1981.
The results are shown as follows :

HB_SAg			Anti-HB_S		
No. of specimen	No. of positive	Percentage	No. of specimen	No. of positive	Percentage
68	14	20.58	64	19	29.68

b. Serodiagnosis of DHF suspected patients

Nine cases of recent DHF were detected among eleven samples submitted during July 1981 - September 1981.

II. Strengthening of the PHL as a public health laboratory

1. Examination of fecas for surveillance of diarrheal diseases

1.1 Number of specimen from PCMO & district hospitals : 248
Number of specimen positive for enteropathogens : 31
1.2 Number of specimen from Prapokklao Hospital : 1507
Number of specimen positive for enteropathogens : 342

2. Bacteriologic examination of food and water

2.1 Water, number of specimen : 80
2.2 Food, number of specimen : 16

III. Strengthening of the SRL in the four district hospitals

The laboratory activities of four SRL during the period of three months are listed as follows :

1. Tamai District Hospital

1.1 Microbiology

- Gram stain-Pathogens = 6
- Gram stain-G.C. = -
- AF stain-TB = 12
- Blood parasitology-Malaria = 1106

1.2 Haematology

- Haematocrit = 449
- Haemoglobin = -
- WBC count = 435
- Diff. count = 423
- Pregnancy test = 46
- VDRL = -

1.3 Urine Analysis = 213

2. Klung District Hospital

2.1 Microbiology

- Gram stain-Pathogens = 15
- Gram stain-G.C. = 15
- AF stain-TB = 18
- Blood parasitology-Malaria = 802
- Stool parasitology-Protozoa:Helminths = 20

2.2 Haematology

- Haematocrit = 322
- Haemoglobin = 322
- WBC count = 272
- Diff. count = 266
- Pregnancy test = 30
- VDRL = 160

2.3 Urine Analysis = -

3. Laemsingha District Hospital

3.1 Microbiology

- Gram stain-Pathogens = 17
- Gram stain-G.C. = 16
- AF stain-TB = 16
- Wet preparation-Fungi = 9
- Blood parasitology-Malaria = 210
- Stool parasitology-Protozoa:Helminths = 1

3.2 Haematology

- Haematocrit = 92
- Haemoglobin = 84
- WBC count = 63
- Diff. count = 63
- VDRL = 33
- Pregnancy test = 24

3.3 Urine Analysis = 209

4. Phong Num-Ron District Hospital

4.1 Microbiology

- Gram stain-Pathogens = 24
- Gram stain-G.C. = 3
- AF stain-TB = 23
- Blood parasitology-Malaria = 3456
- Stool parasitology-Protozoa:Helminths = 3

4.2 Haematology

- Haematocrit = 104
- Haemoglobin = 83
- WBC count = 32
- Diff. count = 32
- VDRL = 18

4.3 Urine Analysis = 135

ACTIVITY II

Virus Research Institute (VRI)

1. Arbovirology

1.1 Production and Standardization of arbovirus reagents

Supply dengue type-2 antigen 20 amps. to virus diagnostic laboratory in PHL. Chanthaburi Province.

1.1.1 Production of antigen

Dengue-e SAPr	24 amps x 0.5 ml.
Dengue-2 SA	28 amps x 0.5 ml.

1.1.2 Production of reference antisera.

1.2 Train personnel in the field of arbovirology and Hepatitis

One scientist from Prapokklao Hospital, Chanthaburi Province was trained in VRI. for 2 weeks to performed serological diagnosis on DHF, Japanese encephalities virus and Hepatitis.

1.3 Give assistance or advice to PHL.

1.4 For the sero-epidemiological surveys of arbovirus in Chanthaburi

In May and December 1980, Paired sera of healthy persons in all age group of Chanthaburi Province were collected by using blood sampling paper for studying the transmission rates of DHF.

Six hundred and fifty two specimens were collected from the same subject in amphoe Muang, Pong Nam-Ron and Khlung, 336 specimens from area applied insecticide and 316 specimens from area not applied insecticide. The hemagglutination inhibition antibody titer of the specimens were measured against dengue virus type-2, type-4 and chikungunya virus.

The results of the study show in table 1-6 and Fig. 1.

2. Respiratory viruses

2.2 Isolation and identification of viral causative agents responsible for Acute Respiratory Infection

The throat washing or throat swab specimens were collected from the out-patients at Prapokklao Hospital and Tamai Health Center between 27th - 30th July 1981.

The number collected was 26. Specimen are under investigation.

Table 1. Mosquitoes collected in light traps at five districts in Chantaburi Province, July - September 1981.

Species	Muang *			Tagad Ngao**			LaemSing*	Pak Nam Krachae	Pong-Namron	Total
	JY	A	S	JY	A	S	S	S***	S*	
Culex tritaeniorhynchus	115	57	71	22	301	9237	189	16	29	10037
Cx. gelidus	241	49	50	4	19	43	4	2	1	413
Cx. fatigans	6	3	4	1	0.5					14.5
Cx. fuscocephala	16	8	3	1		5	11	2	28	74
Cx. hutchisoni	4			0.5		2	0.5	2	25	34
Cx. sinensis				1		90		4		95
Cx. bitaeniorhynchus				0.5	3	10		2		15.5
Cx. sitiens				1	2	10	1			14
Mansonia annulifera	64	31	25	32	140	425	13	20	5	755
Coquillettidia crassipes		1	1	2	2	3		2	1	12
Armigeres subalbatus	1	0.3					2	2	4	9.3
Orthopodomyia anopheloides				2	10	387	12	17		428
Anopheles (A) lesteri paraliae							1			1
A(A) barbirostris	2	2				6	0.5			10.5
A(A) peditaeniatus					7	466		13	1	487
A(A) argyropus		0.3								0.3
A(A) tesselatus				0.5	0.5					1
A(A) subpictus	10	2	2	4	26	114	4	1	14	177
A(A) philippinensis						5			2	7
A(A) aconitus						6			1	7
Mimomyia hybrida	17	4	5	0.5		0.5				27
M. sp.	9	4	5		1	0.5	3		2	24.5
Uranotaenia sp.2			1				2			3
U. sp.8	1	2	6	0.5	0.5		6	4	1	21
U. sp.11	1	1	1			0.5				3.5

* Nozawa's light trap ; ** CDC light trap (battery operated)

*** Monks wood light trap (battery operated)

Table 2. Transmission rates of dengue and chikungunya in Chanthaburi in 1980 by ages.

Age in years	No. tested	Dengue				Chikungunya			
		Sero convert		Ab. response		Sero convert		Ab. response	
<1-4	122	14/15	93.3%	16/107	15.0%	1/119	0.8%	0/3	0 %
5-9	141	3/3	100 %	34/138	24.6%	6/93	6.5%	0/48	0 %
10-14	126	2/2	100 %	29/124	23.4%	4/89	4.5%	0/37	0 %
15-19	92	2/2	100 %	19/90	21.1%	1/61	1.6%	1/31	3.2 %
20-24	22	0/0	0 %	4/22	18.2%	1/15	6.7%	0/7	0 %
25-34	74(73)	0/0	0 %	11/74	14.9%	0/26	0 %	1/4?	2.1 %
≥ 35	75(58)	0/0	0 %	4/75	5.3%	1/13	7.7%	1/45	2.
Total	652(634)	21/22	95.5%	117/630	18.6%	14/416	3.4%	3/210	1.4%

(*) No. of test with chikungunya virus.

* No. of seroconversion and antibody response to chikungunya virus.

Table 3. Transmission of dengue and chikungunya viruses in Chanthaburi 1980.

Areas	Age in years	No tested	Dengue		chikungunya	
			Sero convert	Ab.response	Sero convert	Ab.r
area applied insecticide	< 1-4	75	8/9 88.9%	8/66 12.1%	0/72 0 %	0/3
	5-9	56	1/1 100% %	14/55 25.5%	3/45 6.7%	0/11 0
	10-14	68	2/2 100 %	14/66 21.2%	1/62 1.6%	0/6 0
	15-19	72	2/2 100 %	17/70 24.3%	1/54 1.9%	1/18 5.6
	20-24	8	0/0 0 %	0/8 0 %	0/6 0 %	0/2 0
	25-34	38(37°)	0/0 0 %	6/38 15.8%	0/21° 0 %	0/16° 0
	≥ 35	19	0/0 0 %	1/19 5.3%	0/6 0 %	0/13 0
	Total	336(335°)	13/14 92.9%	60/322 18.6%	5/266° 1.9%	1/69° 1.4
area not plied insecticide	< 1-4	47	6/6 100 %	8/41 19.5%	1/47 2.1%	0/0 0
	5-9	65	2/2 100 %	20/83 24.1%	3/48 6.3%	0/37 0
	10-14	58	0/0 0 %	15/58 25.9%	3/27 11.1%	0/31 0
	15-19	20	0/0 0 %	2/20 10.0%	0/7 0 %	0/13 0
	20-24	14	0/0 0 %	4/14 28.6%	1/9 11.1%	0/5 0
	25-34	36	0/0 0 %	5/36 13.9%	0/5 0 %	1/31
	≥ 35	56(39°)	0/0 0 %	3/56 5.4%	1/7° 14.3%	1/3
	Total	316(299°)	8/8 100 %	57/308 18.5%	9/150° 6.0%	2/149° 1.
Total		652(634°)	21/22 95.5%	117/630 18.6%	14/416° 3.4%	3/218° 1.

(°) No. of test with chikungunya virus.

* No. of seroconversion and antibody response to chikungunya virus.

Table 4. Geometrical Mean titer (GMT) of the HI tests performed in Chanthaburi in 1980 according to the age groups and the areas of in-secticides treatment.

Areas	Age in years	Dent- 2		Den - 4		Chik	
		Pre	Post	Pre	Post	Pre	Post
With insecticide application	<1-4	15.3	27.1	41.1	64.1	10.7	10.7
	5-9	105.0	190.2	95.1	174.4	14.9	19.0
	10-14	62.6	117.9	83.3	153.6	11.9	12.8
	15-19	102.8	183.0	138.5	230.6	15.3	16.7
	20-24	103.7	113.1	95.1	123.3	14.2	14.2
	25-34	154.3	243.3	192.0	319.9	21.6	23.2
	35+	128.5	178.4	169.9	308.4	41.5	44.6
No.insecticide application	<1-4	21.2	45.7	43.7	82.4	10.0	
	5-9	119.2	250.5	132.6	285.4	22.6	29.3
	10-14	243.0	515.9	237.3	457.8	26.7	42.5
	15-19	171.4	259.8	196.9	251.0	33.6	44.4
	20-24	152.3	275.7	204.8	371.1	17.2	22.1
	25-34	142.5	244.3	193.9	326.1	95.1	119.9
	35+	124.8	168.1	201.5	303.0	87.4	114.1
Total	<1-4	17.4	33.2	42.1	70.6	10.4	10.5
	5-9	113.4	224.6	116.2	234.7	19.2	24.7
	10-14	116.9	232.5	134.9	253.9	17.2	22.2
	15-19	114.8	197.5	149.5	234.8	18.1	20.6
	20-24	132.4	199.5	155.0	248.6	16.0	18.8
	25-34	148.5	243.8	193.0	322.9	44.8	52.2
	35+	125.8	170.6	191.2	304.5	68.5	83.9

Table 5. Difference of GMT between the serum specimens taken in pre-epidemic season and that taken in post-epidemic season, 1980 chanthaburi, Thailand.

Areas	Age in years	1980		
		D-2	D-4	chik
with insecticides	<1-4	11.8	23.0	0
	5-9	85.2	79.3	4.1
	10-14	55.3	70.3	0.9
	15-19	80.2	92.1	1.4
	20-24	9.4	28.2	0
	25-34	89.0	127.9	1.6
	≥ 35	49.9	142.5	3.1
No.insecticides	<1-4	24.5	38.7	0.3
	5-9	131.3	152.8	6.5
	10-14	272.9	220.5	15.8
	15-19	88.4	54.1	10.8
	20-24	123.4	166.3	4.9
	25-34	101.8	132.2	24.8
	≥ 35	43.3	101.5	26.7
Total	<1-4	15.8	28.5	0.1
	5-9	111.2	118.5	5.5
	10-14	115.6	119.0	5.0
	15-19	82.7	85.3	2.5
	20-24	67.1	93.6	2.8
	25-34	95.3	129.9	7.4
	≥ 35	44.8	113.3	15.4

Table 6. Estimate of human population exposed to dengue viruses in Chanthaburi in the year of 1980.

	Areas Amphoe, Tambol	Population in age groups					transmission	
		< 1-4	5-9	10-14	15+	total	rate	populati
With insecticides application	[illegible], Tab sai	[illegible]	[illegible]	[illegible]	3,170	5,810	50/237	1,226
	" , Sai Kao	1,479	1,591	1,530	5,524	10,124	1/[illegible]	723
	Muang, Watmai	[illegible]	2,259	[illegible]	[illegible]	[illegible]	[illegible]	6,303
	" , [illegible]	[illegible]	1,417	1,219	[illegible]	9,497	[illegible]	[illegible]
	Total	[illegible]	6,180	6,792	33,233	[illegible]		
	transmission rate	16/75	15/56	16/68	26/137			
	Population	1,184	1,655	1,598	6,307	[illegible]		
		4,437 (< 1-4 to 10-14)						
No.insecticide application	Khlung, tapoon	149	289	482	2,320	3,240	50/232	698
	" , Kwian-hak	122	297	1,202	2,363	3,984	9/66	543
	" , Bo	478	619	685	2,952	4,734	6/18	1,578
	Total	749	1,205	2,369	7,635	11,958		2,819
	transmission rate	14/47	22/85	15/58	14/126			
	population	261	312	613	848	2,034		
		1,186 (< 1-4 to 10-14)						

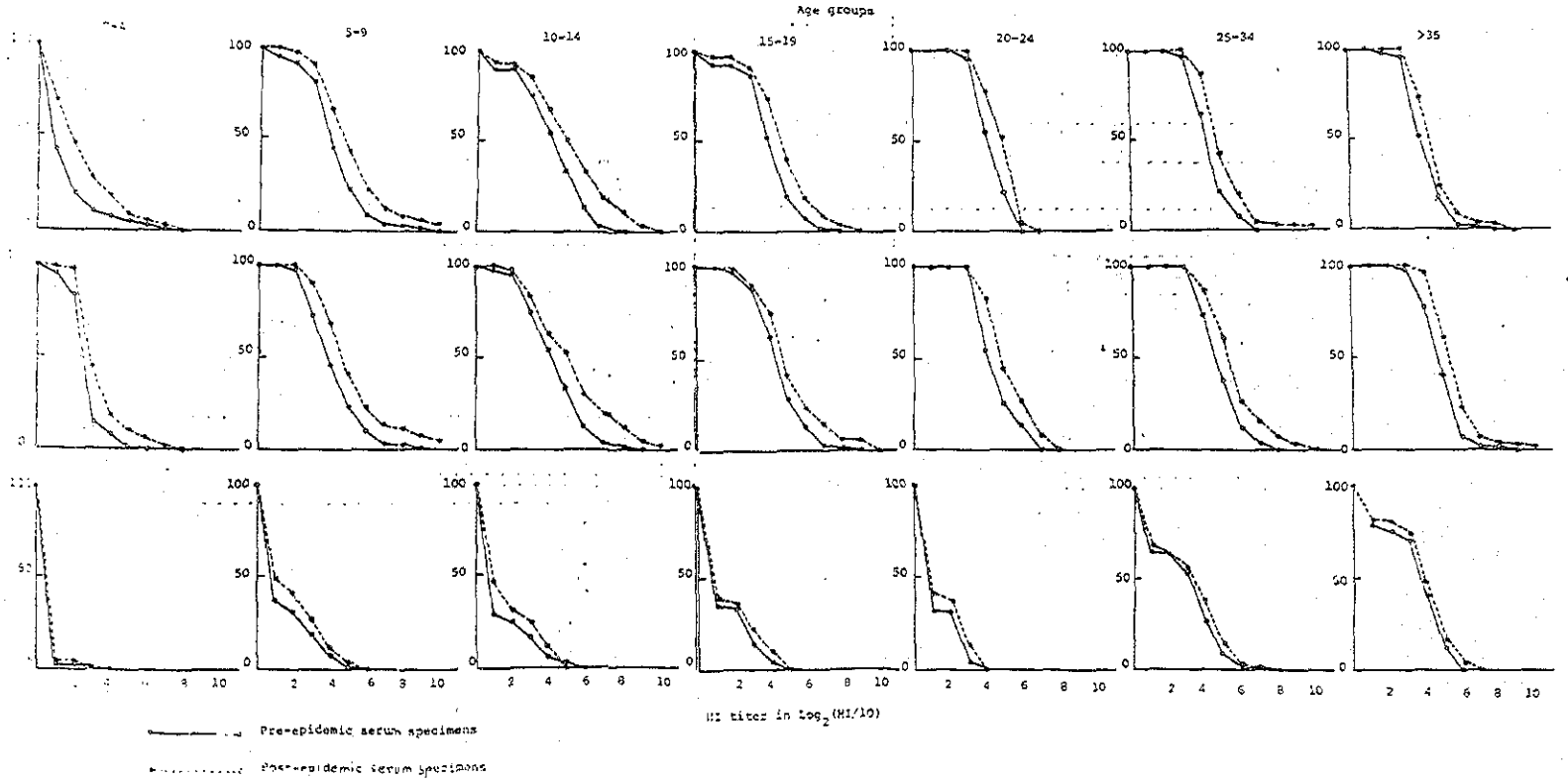
total population in the study area : 63,713 (19.3% of Chanthaburi province)

Estimate population exposed to dengue in 1980.

	In the study areas	In the total province
Under 14 years old	4,437 + 1,186 = 5,623	5,623 x 100/19.3 = [illegible],155
Over 15 years old	6,307 + 846 = 1,155	7,155 x 100/19.3 = 37,[illegible]73
Total	12,778	[illegible]

* Population in Chanthaburi province 1980 = 330,[illegible] Persons.

1. ...distribution of log 2 antibodies against Den-2, Den-4 and Chik viruses before and after the epidemic season in chakrakhat 1980



- Chemical examination

Analysis	Samples analysed	Violated Samples
1. Food Colors	30	14
2. Aflatoxins	19	9
3. Preservatives	6	2
4. Mercury	3	2
5. Plastics containers	10	1
6. Vinegar	1	-
7. Lard	2	1
8. Nitrite, Nitrate	4	-

For safety and health of the people in Chantaburi, all datas were sent to the Office of Provincial Health in order to regulate the qualities of food products and the storage of food prior to marketing.

Division of Medical Entomology (DME)

During the months of July to September there were not many Dengue Haemorrhagic Fever Cases in Chanthaburi. Therefore *Aedes aegypti* control to combat DHF outbreak was omitted. This year DHF prevention was carried out during May to June only (Quarterly report No. 2).

Since the DME staff had to carry out a large scale use of ISA-2-OE in suburban of Bangkok and because of limited budget, the activities in Chanthaburi were carried out by our local staff in Chanthaburi under the supervision of Dr. Buei (Japanese expert). Most of the work were mosquito collections for species differentiation.

In September a DME team carried out mosquito pathogens survey in Chanthaburi. Live and dead mosquito larvae, organic debris and mud in different habitats were samplingly collected and brought back to DME laboratory. In the laboratory, processes for bacilli isolation have been going on.

Laboratory for Bacteriology

1. Three hundred and thirty five specimens were received from PHL Chanthaburi for typing as follows :

1.1	Salmonella	35
1.2	Shigella	34
1.3	Enteropathogenic E. coli	55
1.4	V. parahaemolyticus	110
1.5	Other Vibrios	13
1.6	Other bacteria	84
1.7	No growth	4
	Total	335

2. Supply of antisera and antigens to PHL Chanthaburi

2.1	Salmonella antisera	12 ml
2.2	E. coli antisera	12 ml
2.3	Salmonella antigen	4,500 ml

Division of Food Analysis (DFA)

1. Equipment

DFA. received scientific glassware and chemical reagent as follows :

1.1 Scientific glassware 10 items.

1.2 Chemical reagent 53 items

1.3 Standard colouring matter and dye 38 items

2. Expert

Dr. Y. Tonogai has been carried out the cooperative activities on chemical analysis of food additives, contaminants and harmful substances in foods and food container-packages from 5th August 1981 for one year.

3. Activities

With the cooperation of the Provincial Health Officers during 1-4 July 1981, ninety-eight samples (133 items) were collected from the four model areas in Chantaburi. The results are as follows.

Microbiological examination :

Fifty one food samples were examined for sanitary index and food-borne pathogens, Cl.perfringens were found in 6 samples of four salted shrimp paste, one dried white cake and one fermented fish.

Eight samples of bottle - water did not meet the microbiological standards of drinking water.

Division of Public Health Laboratory Services (DPHLS)

Chemical reagents, bacteriological media and antisera have been supplied regularly to PHL Chanthaburi and Chonburi during July to September 1981.

Table 1 The results of examination of fecal specimens collected in "Medical Service"

Village and Date	Range of Age	Number of specimens examined	Results: Bacteria	Results: Parasite	
Tagad Ngao	-6	2			
July 10 1981	7-15	90	Salmonella group G (1) NAG vibrio (1)	Hook worm E.vermicularis T.trichiura S.stercolaris	17 3 2 1
	16-20	1			
	21 -	9	V.parahaemolyticus (1)		
	unknown	5			
	Subtotal	107	(positives : 2.6%)	(positives : 21.5%)	
Bo	-6	24	V.parahaemolyticus (1)	Hook worm	1
August 21 1981	7-15	19		Hook worm E.vermicularis S.stercolaris T.orientalis	7 1 1 1
	16-20	5			
	21 -	21		Hook worm	7
	unknown	8	Salmonella group B (1)	Hook worm S.stercolaris	3 1
	Subtotal	77	(positives : 3.7%)	(positives : 28.6%)	
Sam Rong	-6	22	Salmonella group B (1)	Hook worm	1
September 14 1981	7-15	9		Opistorchis sp.	1
	16-20	3		Hook worm	1
	21 -	46	P.shigelloides (2)	Hook worm T.orientalis Taenidae sp.	3 1 1
	unknown	11		Hook worm	3
	Subtotal	91	(positives : 3.3%)	(positives : 13.2%)	
	TOTAL	275	(positives : 3.3%)	(positives : 22.2%)	

Table 2 Results of the "Bacteriological examination of Restaurants" in Chanthaburi (July-Sept., 1981)

Target No.	Results of examinations											
	Cooking wares	Table wares	Drinking water			Washing water			Ice for drinking			
	Pathogenic bacteria	Pathogenic bacteria	Patho-gens	Coli-forms	Total bact.c.	Patho-gens	Coli-forms	Total bact.c.	Patho-gens	Coli-forms	Total bact.c.	
1	-	-	NT*	NT*	NT*	-	$2.0X10^2$	$3.0X10^3$	-	2	1.8X10	
3	-	NAG vibrio	NT*	NT*	NT*	NAG v.	NT[a]	NT[a]	-	NT[a]	NT[a]	
4	-	-	NT*	NT*	NT*	NT[b]	NT[b]	NT[b]	-	5.2X10	$4.5X10^2$	
5	-	-	NT*	NT*	NT*	-	0	0	-	2	7	
8	-	-	NT*	NT*	NT*	-	$2.0X10^3$	$3.6X10^3$	-	$3.0X10^2$	$1.2X10^3$	
9	-	V. parahaemo. & P. Shigel.	-	0	0	-	$1.3X10^2$	$2.1X10^2$	-	0	5.6X10	
11	-	-	-	6.5X10	$3.4X10^2$	-	$1.0X10^3$	$3.0X10^4$	-	$1.0X10^2$	$3.0X10^2$	
12	-	-	-	$2.0X10^3$	$3.5X10^3$	-	$7.1X10^2$	$1.6X10^3$	-	$3.3X10^2$	$7.7X10^2$	
13	-	V. parahaemo.	-	2	$3.6X10^3$	V.para.	$2.6X10^3$	more than 200	-	1.9X10	$2.7X10^2$	
14	-	-	NT*	NT*	NT*	-	$1.0X10^3$	$3.0X10^4$	-	$1.0X10^2$	$6.0X10^3$	
17	-	-	NT*	NT*	NT*	-	NT[a]	NT[a]	-	NT[a]	NT[a]	
18	-	-	-	0	$1.0X10^2$	-	9	$1.0X10^2$	-	6.5X10	$4.4X10^3$	

NT* -- Not tested because of their using commercial producs as drinking water.

NT[a] -- Lacked the data.

NT[b] -- Could not get a sample.

Table 3 The results of examination of stools collected from restaurants' workers

Target No.	No. of samples examined	No. of pathogen-positibe cases		Positive cases	
		Bacteria	Parasite	Bacteria	Parasite
1	14	2 (14.3%)		V.parahaemolyticus (2).	
3	13	-			
5	10	4 (40.0%)		Salmonella (1), E.coli (2) & P.shigelloides (1).	
8	8	2 (25.0%)		V. parahaemolyticus (2)	
9	13	-			
13	7	3 (42.9%)		V. parahaemolyticus (2), & V.para. + P.shigel. (1).	
14	12	2 (16.7%)		V.parahaemolyticus (1), & V.para + P.shigel. (1)	
17	4	-			
18	2	-			
Total	83	13 (15.7%)		(No. of isolates : 15)	

List of Samples (water & ice)

Sampling No.	Target	(No.)	Sample
1	Water supply	(T-1)	Final water
2	"	(T-2)	"
3	Public well	(T-5)	Well water
4	Bottled water	(T-6)	Original water
5	"	(T-6)	Final product
6	"	(T-9)	Original water
7	"	(T-9)	Final product
8	Water container	(T-10)	Rain water
9	"	(T-11)	"
10	"	(T-12)	"
11	Ice factory	(T-13)	Treated water
31	"	(T-13)	Ice
12	School	(-)	Well water (old well)
13	"	(-)	" (new well)
21	Public well	(T-3)	Well water
22	"	(T-4)	"
23	Bottled water	(T-7)	Original water
24	"	(T-7)	Final product
25	"	(T-8)	Original water
26	"	(T-8)	Final product
27	Ice factory	(T-14)	Treated water
32	"	(T-14)	Ice
28	"	(T-15)	Treated water
33	"	(T-15)	Ice
29	"	(T-16)	Treated water
34	"	(T-16)	Ice

Table 4 Result of "Monthly checking of water and ice", July 1981

Target	Sample	Results					
		Total B.C.	E. Coli	Coliform	ph	Cl-	Pathogen
T1	Final Water	16	-	-	6.8	(-)	-
T2	Final Water	30	-	10	6.8	(-)	Shigella D
T5	Well Water	20	-	-	6.0	(-)	-
T6	Original W.	3	-	-	<6.0	-	-
T6	Final Prod.	7	-	-	<6.9	-	-
T9	Original W.	3	-	-	7.5	(-)	-
T9	Final Prod.	-	-	-	6.6	(-)	-
T10	Rain Water	32	-	24	7.4	(-)	-
T11	Rain Water	56	-	20	7.6	(-)	-
T12	Rain Water	3	-	-	7.6	(-)	-
T13	Treated Water	2	-	-	<6.0	(-)	-
(old)	Well (school)	28	-	5	<6.0	(-)	-
(new)	Well (school)	-	-	-	<6.0	(-)	-
T3	Well Water	100	-	40	<6.0	(-)	-
T4	Well Water	20	-	1	<6.0	(-)	-
T7	Original Water	30	-	2	<6.0	(-)	-
T7	Final Prod.	20	-	1	<6.0	(-)	-
T8	Original W.	NT	NT	NT	NT	NT	NT
T8	Final Prod.	44	-	-	7.2	(-)	-
T14	Treated W.	-	-	-	6.0	(-)	-
T15	Treated W.	24	-	1	<6.0	(-)	-
T16	Treated W.	10	-	-	7.2	(-)	(citro)**
T13	Ice	?	-	-	7.5	(-)	-
T14	Ice	100	-	-	7.5	(-)	-
T15	Ice	NT	NT	NT	NT	NT	NT
T16	Ice	3	-	-	7.0	(-)	-

T1,2=Water supply; T3,4,5=Public well; T6,7,8,9,=Drinking-water factory;
T10,11,12-water container for rain water; T13,14,15,16=Ice factory.
Total B.C.+Total bacterial counts per gram; Cl^- -by p.p.m.; NT=Not treated;
Shigella D = Detected Shigella sonnei

Table 5 Result of "Monthly checking of water and ice", September 1981

Target	Sample	Results					
		Total B.C.	E.coli	Coliform	ph	Cl^-	Pathogen
T1	Final Water	10	-	0	NT	(-)	P.shigella*
T2	Final Water	50	-	0	NT	(-)	P.shigellar*
T5	Well Water	40	-	0	NT	(-)	-
T6	Original W.	5	-	0	NT	-	-
T6	Final Prod.	15	-	0	NT	-	-
T9	Original W.	150	-	0	NT	(-)	-
T9	Final Prod.	10	-	0	NT	(-)	-
T10	Rain Water	100	-	15	NT	(-)	-
T11	Rain Water	40	-	0	NT	(-)	-
T12	Rain Water	32	-	0	NT	(-)	-
T13	Treated W.	1	-	0	NT	(-)	-
(old)	Well(school)	NT	NT	NT	NT	NT	NT
(new)	"	3	-	0	NT	(-)	-
T3	Well Water	35	-	0	NT	(-)	-
T4	Well Water	1	-	0	NT	(-)	-
T7	Original W.	1	-	0	NT	(-)	-
T7	Final Prod.	100	-	0	NT	(-)	-
T8	Original W.	NT	NT	NT	NT	NT	NT
T8	Final Prod.	20	-	0	NT	(-)	-
T14	Treated W.	0	-	0	NT	(-)	-
T14	Treated W.	0	-	0	NT	(-)	-
T15	Treated W.	10	-	0	NT	(-)	-
T16	Treated W.	10	-	0	NT	(-)	-
T13	Ice	4	-	0	NT	(-)	-
T14	Ice	0	-	0	NT	(-)	-
T15	Ice	0	-	0	NT	(-)	-
T16	Ice	0	-	0	NT	(-)	-

T1,2=Water supply; T3,4,5=Public well; T6,7,8,9=Drinking water factory;
T10,11,12-Water container for rain water; T13,14,15,16=Ice factory
Total B.C.=Total bacterial counts per gram; Cl=by p.p.m.; Nt=Not treated;
P.shigel*=Detected Plesiomonas shigelloides.

Public Health Laboratory, Chon Buri Hospital

Progressive work from July to September 1981

	July	August	September
1. Bacteria	2,589 Samples	2,976 Samples	3,488 Samples
2. Serology	1,175 Tests	1,382 Tests	1,354 Tests
3. Parasitology	6,160 Samples	5,839 Samples	5,388 Samples
4. Fungus	328 Samples	411 Samples	297 Samples
5. Hematology	12,196 Samples	11,626 Samples	11,773 Samples
6. Clinical chemistry	4,130 Tests	4,583 Tests	4,522 Tests
7. C.S.F.	319 Samples	495 Samples	410 Samples
8 Urine	4,311 Tests	4,170 Tests	5,325 Tests
9. Drinking water examination	26 Samples	26 Samples	26 Samples
10. Reagents preparation	248,000 C.C	500,000 C.C.	271,000 C.C
11. Rabies (F.A.-Technique)	20 Samples	24 Samples	37 Samples
12. Hepatitis B Antigen	17 Samples	11 Samples	11 Samples
13. Hemoglobin Typing	3 Samples	11 Samples	13 Samples
14. Protein Fraction	- Samples	- Samples	4 Samples

ACTIVITY III Strengthening of Epidemiological Service System

III-1 Medical Service

Medical Service was carried out once a month.
In these three months, 275 specimens which include 107 from Tagad-ngao, 77 from Bo and 91 from Samrong were examined. Salmonella (3 strains), V. parahaemolyticus (2), NAG vibrio (1) and P. shigelloides (1) were isolated, and total parasitological positive ratio was 22.2% (See Table 1)

III-2 Bacteriological examination of restaurants

12 samples of kitchen wares and table wares are examined, and isolated V. parahaemolyticus, NAG vibrio and P. shigelloides. Five samples of drinking water, 11 of washing water and 12 of ice for drink were examined, 2 pathogen-possitive samples of washing water were found (See Table 2).

83 samples of stool collected from the man who was working in each restaurant were examined, and 13 of pathogen-possitive cases (15.7%). The isolates were Salmonella (1 strain), V. parahaemolyticus (9), Enteropathogenic E. coli (2) and P. shigelloides (3). (See Table 3)

III-3 Monthly checking of water and ice for general uses

These checking of water and ice were taken three times number of the samples, collected and examined, were 48 in total. Not only detection of pathogenic bacteria but also total bacterial counts, coliform bacteria counts were tried, collected from water container, then Shigella sonnei (1) and P. shigelloides (2) was isolated from three samples of water. (See Table 4-5)

* the data of III-3 on August was missing.

* these activities were conducted jointly between administrative side (PCMO) and laboratory side (PHL).

III-4 Others

During July-September 1981, PCMO cooperated with the Japanese Experts of Medical Service unit from the Promotion of Public Health Technical and Services Office, and the Public Health Laboratory Service of Prapokklao Hospital, Chanthaburi to carry out the Project in the model area as follow :

1. On July 10, 1981 rendered services to 54 patients at Ban Tagad-ngao, Tamai district.
2. On August 21, 1981 rendered services to 145 patients at Ban Bo, Khlung district.
3. September 14, 1981 rendered services to 186 patients at Tambon Sap-kao, Pong Nam Ron district.

Table I DETECTION OF RUBELLA VIRUS ANTIBODY IN HUMAN SERA COLLECTED AT PRAPOKKLAO HOSPITAL IN CHANTHABURI

Application of Freeze-Dried, One-Day-Old Chick Erythrocytes and HEPES Buffered Saline to Hemagglutination-Inhibition-Test

sample No.	serum No.	sex	age	HI-titer
1	0002	M	8/12	<8
2	0003	M	11/12	<8
3	0102	F	2-3/12	<8
4	0103	F	2-2/12	<8
5	0302	F	4	8
6	0303	M	5	<8
7	1004	F	19	128
8	1005	F	19	32
9	1015	F	14	<8
10	1016	F	14	<8
11	2002	M	20	64
12	2009	F	26	8
13	4003	F	42	64
14	4004	M	47	32
15	516 A	M	20	<8
16	516 C	M	20	16

By C. Kanai, B. Damrong*, T. Wuddtana*, J. Chuinrudee, S. Pranee and H. Ito.
Department of Medical Sciences, Virus Research Institute, Yod-se, Bangkok 1, Thailand and * Prapokklao Hospital, Chanthaburi, Thailand.

Note : The above experiment was done at Prapokklao Hospital in Chanthaburi.
HEPES: N-2-hydroxyethyl piperazine-N'-2'-ethanesulfonic acid.

ACTIVITY IV Training

No training activities during July - September 1981.

ACTIVITY V

V - 1 Operational research in Virology

V-1-1 Research on arbovirus infections in Chanthaburi area

Dengue Virus

1. Application of formalinezed, freeze-dried, one-day-old chick erythrocytes (FDCRBCs) to the Dengue virus (type 2) hemagglutination (HA) reaction was tested.
2. Application of phosphate buffered saline solution (PBS) to Dengue virus (type 2) HA reaction was tested.

Summary of the results

FDCRBCs were agglutinated with the Dengue virus (type 2) HA antigen. The susceptibility of FDCRBCs for the HA antigen approximately the same extent as fresh, one-day-old chick erythrocytes (FCRBCs) in two kinds of diluents, BS 9.0* and PBS.

Note: * BS 9.0, Borate saline, pH 9.0, developed by Clark and Casals (1958).

Rubella virus

1. Application of FDCRBCs and HEPES buffered saline solution (see table 1) to the Rubella virus HA and Hemagglutination-inhibition (HI) reactions were tested.
2. Application of above-mentioned assay system (B-1) for dection of Rubella virus antibody in human sera collected at Prapokklao Hospital in Chanthaburi was tested.

Summary of the results

FDCRBCs were agglutinated with the Rubella virus HA antigen in HEPES buffered saline solution. The susceptibility of FDCRBCs for the Rubella virus HA antigen approximately the same as FCRBCs's case.

Detection of the Rubella virus HI antibody in human sera were carried out through the FDCRBCs-HEPES assay system at Prapokklao Hospital in Chanthaburi. Although there was no Rubella virus antibody response in human sera under 5 years old (0/6), the antibodies were detected in high rate in human sera older than 5 years old (6/10).

Table 1. Mosquitoes collected in light traps at five districts in Chanthaburi Province, July - September 1981.

Species	Muang*			Tapad Nrae**			LaemSing*	Pak Nam Krachae	Pong-Namron	Total
	JY	A	S	JY	A	S	S	S***	S*	
Culex tritaeniorhynchus	115	57	71	22	301	9237	189	16	29	10037
Cx. gelidus	241	49	50	4	19	43	4	2	1	413
Cx. fatigans	6	3	4	1	0.5					14.5
Cx. fuscocephala	16	8	3	1		5	11	2	28	74
Cx. hutchisoni	4			0.5		2	0.5	2	25	34
Cx. sinensis				1		90		4		95
Cx. bitaeniorhynchus				0.5	3	10		2		15.5
Cx. sitiens				1	2	10	1			14
Mansonia annulifera	64	31	25	32	140	425	13	20	5	755
Coquillettidia crassipes		1	1	2	2	3		2	1	12
Armigeres subalbatus	1	0.3					2	2	4	9.3
Orthopodomyia anopheloides				2	10	387	12	17		428
Anopheles (A) lesteri paraliae							1			1
A(A) barbirostris	2	2				6	0.5			10.5
A(A) peditaeniatus					7	466		13	1	487
A(A) argyropus		0.3								0.3
A(A) tesselatus				0.5	0.5					1
A(A) subpictus	16	2	2	4	26	114	4	1	14	177
A(A) philippinensis						5			2	7
A(A) aconitus						6			1	7
Mimomyia hybrida	17	4	5	0.5		0.5				27
M. sp.	9	4	5		1	0.5	3		2	24.5
Uranotaenia sp.2			1				2			3
U. sp.8	1	2	6	0.5	0.5		6	4	1	21
U. sp.11	1	1	1			0.5				3.5

* Nozawa's light trap ; ** CDC light trap (battery operated)

*** Monks wood light trap (battery operated)

Table 2 Number of occurrences of mosquitoes larva, July-September 1981

Species	Breeding Sites (Number observed)					
	Marsh (2)	Artificial container (5)	Rock pool (1)	Bamboo (5)	Rubber grove (4)	Total
Aedes albopictus		71		23	167	261
Aedes chrysolineatus			5		15	20
Cx. sinensis	16					16
Cx. fatigans		7				7
Cx. hutchisoni		4				4
Cx. fuscocephala		18	12		43	73
Cx. gelidus	1					1
Tripteroides hybridus		2		27	20	49
Tr. aranoides				21		21
Tr. caeruleocephalus				3		3
Tr. sp.				3		3
Toxorhynchites splendens					2	2

V-1-2 Entomological and ecological studies on the arbovirus vector mosquitoes

(1) The information on the geographic distribution and the seasonal prevalence of mosquitoes is important to understand the mosquito-borne diseases. The investigation was carried out in five districts of Chantaburi province. Mosquitoes were collected by using light traps.

A total of 25 species of mosquitoes were collected which included Culex, 8 spp.; Anopheles, 8 spp.; Mansonia 1 sp.; Coquillettidia 1 sp.; Orthopodomyia, 1 sp.; Armigeres, 1 sp.; Mimomyia, 2 spp. and Uranotaenia, 3 pp.

Culex tritaeniorhynchus, Cx. gelidus, Mansonia annulifera, Orthopodomyia anopheloides, Anopheles peditaeniatus and An. subpictus were the most abundant mosquito species, representing over 97% of all mosquito collected.

In Tagad Ngao, greater numbers of each species were collected in September.

(2) During July-September, a survey was made on mosquito breeding in Chantaburi Province. A total of 12 species of mosquitoes were collected. Species, number of individuals and breeding sites are shown in Table 2.

Table 1 Isolation of Enteropathogenic Bacteria form fecal Specimens of Diarrheal Cases among In and Out-Patients of Prapokklao and District Hospitals in Chanthaburi (July-Sept. 1981)

Month	No. of Specimens examined	No. of pathogen possitive cases (%)	No. of isolates	Pathogen													
				V.cholerae		Shigella				Salmonella		V/para	E.coli		Group F	P.shigel.
				O-1	NAG	A	B	C	D	T.G.	Others		I-III	IV,V		
July	517	125(24.2%)	138	-	2	1	6	-	18	-	15	46	23	8	-	19
Aug.	353	90(25.5%)	98	-	4	-	5	-	8	-	11	28	20	9	-	13
Sept.	484	105(21.7%)	120	-	3	-	14	1	6	-	7	48	14	7	-	20
Total	1,354	320(23.6%)	356	-	9	1	25	1	32	-	33	122	57	24	-	52

T.G.--- Typhoid group, V. para.--- Vibrio parahaemolyticus, P.shigel.--- Plesiomonas shigelloides

V - 2 Analysis on causative agents of GI diseases

V-2-1 Microbiological research for GI diseases in Chanthaburi

Bacteriological examination on fecal specimens of diarrheal cases among in- and out-patients of Prapokklao and district hospitals in Chanthaburi.

In these three months, 1,354 specimens were examined. Then we isolated pathogenic bacteria from 320(23.6%) cases. The strains which were isolated in these cases were; 9 strains of NAG vibrio, 59 of Shigella, 33 of Salmonella, 122 of V. parahaemolyticus, 81 of E. coli and 53 of shigelloides (See Table 1).

Beside routine work mentioned above, Tuesday's weekly research of fecal specimens of diarrheal cases was continuous. In three months between July to September, this work was repeated 9 times, and we examined 160 of fecal specimens in total. Then 46(28.8%) of these specimens were pathogen possitive. The isolates from specimens were; two strains of NAG vibrio 14 of shigella, 3 of Salmonella, 21 of E. coli, 6 of V. parahaemolyticus and 4 of P. shigelloides (See Table 2).

Table 1. Transmission rates of deague and chikungunya viruses in various areas in Chanthaburt 1980.

	Areas Amphoe	Tambol	No tested	Dengue Sero convert		Dengue Ab response		Chikungunya Sero convert		Chikungunya Ab response	
No.insecticide application with insecticide application	Pong Nam Ron,	Tab Sai	237(236)	11/12	91.7%	39/225	17.3%	4/184*	2.2%	0/52*	0 %
	Pong Nam Ron,	Sai Kao	14	0/0	0 %	1/14	7.1%	0/12	0 %	1/2	50.0%
	Muang (Wat Mai)		71	0/0	0 %	17/71	23.9%	1/57	1.8%	0/14	0 %
	Muang	, Ban gacha	14	2/2	100.0%	3/12	25.0%	0/13	0 %	0/1	0 %
	Total		336(335)	13/14	92.9%	60/322	18.6%	5/266*	1.9%	1/69*	1.4%
	Khlung,	Ta Porn	232(224)	4/4	100.0%	46/228	20.2%	4/102	3.9%	2/122	1.6%
	Khlung,	Bulan Huk	66(57)	1/1	100.0%	8/65	12.3%	5/30	16.7%	0/27	0 %
	Khlung,	Bo	18	3/3	100.0%	3/15	20.0%	0/18	0 %	0/0	0 %
	Total		316(299)	8/8	100.0%	57/308	18.5%	9/150*	6.0%	2/149*	1.3%
Total			652(634)	21/22	95.5%	117/630	18.6%	14/416*	3.4%	3/218*	1.4%

(*) No. of test with chikungunya virus.

* No. of seroconversion and antibody response to chikungunya virus.

Table 2 Number of occurrences of mosquitoes larva, July - September, 1981

Species	Breeding Sites (Number observed)					
	Marsh (2)	Artificial container (5)	Rock pool (1)	Bamboo (5)	Rubber grove (4)	Total
Aedes albopictus		71		23	167	261
Aedes chrysolineatus			5		15	20
Cx. sinensis	16					16
Cx. fatigans		7				7
Cx. hutchisoni		4				4
Cx. fuscocephala		18	12		43	73
Cx. gelidus	1					1
Tripteroides hybridus		2		27	20	49
Tr. aranoides				21		21
Tr. caeruleocephalus				3		3
Tr. sp.				3		3
Toxorhynchites splendens					2	2

Table 4. Results of the "Bacteriological examination of Restaurants" in Chanthaburi (July-Sept., 1981)

Target No.	Results of examinations										
	Cooking wares	Table wares	Drinking water			Washing water			Ice for drinking		
	Pathogenic bacteria	Pathogenic bacteria	Pathogens	Coliforms	Total bact. c.	Pathogens	Coliforms	Total bact. c.	Pathogens	Coliforms	Total bact. c.
1	-	-	NT*	NT*	NT*	-	2.0×10^2	3.0×10^3	-	2	1.8×10
3	-	NAG vibrio	NT*	NT*	NT*	NAG v.	NT[a]	NT[a]	-	NT[a]	NT[a]
4	-	-	NT*	NT*	NT*	NT[b]	NT[b]	NT[b]	-	5.2×10	4.5×10^2
5	-	-	NT*	NT*	NT*	-	0	0	-	2	7
8	-	-	NT*	NT*	NT*	-	2.0×10^3	3.6×10^3	-	3.0×10^2	1.2×10^3
9	-	V. parahaemo. & P. shigel.	-	0	0	-	1.3×10^2	2.1×10^2	-	0	5.6×10
11	-	-	-	6.5×10	3.4×10^2		1.0×10^3	3.0×10^4	-	1.0×10^2	3.0×10^2
12	-	-	-	2.0×10^3	3.5×10^3		7.1×10^2	1.0×10^3	-	3.3×10^2	7.7×10^2
13	-	V. parahaemo.	-	2	3.6×10^3	V.p. re.	2.6×10^3	more than 200	-	1.9×10	2.7×10^2
14	-	-	NT*	NT*	NT*		1.0×10^3	3.0×10^4	-	1.0×10^2	6.0×10^3
17	-	-	NT*	NT*	NT*	-	NT[a]	NT[a]	-	NT[a]	NT[a]
18	-	-	-	0	1.0×10^2	-	9	1.0×10^2	-	6.5×10	4.4×10^3

NT*——Not tested because of their using commercial products as drinking water.

NT[a]——Lacked the data. NT[b]——Could not get a sample.

V - 3 Operational research on community participation in health promotion

V-3-1 Research on the actual condition of volunteers in project field

The result of "enquete" research was published.

The abstract of this paper is as follows :

For accomplishing the need to promote our project, "Promotion of Provincial Health Services", authors have done research on the actual conditions of volunteers in the project fields. The number of them are 38, so the same number of volunteers are selected to work in the control area from other Amphurs in Chanthaburi. The research conducted on the following items: Age, Sex, Native Place, Occupation, School Carrier, Sphere, Position in their villages, Working time and their understanding on Medical Situations of their villages. By the result of this survey, it might say that our project fields are rather conservative because of the fact that the number of male elder volunteers are more than young females, and their occupations are limited to agricultural works comparing with control villages. Their Native Place, School Carrier, Sphere are not so different among the two groups. The number of persons who are taking other official positions besides medical volunteers are almost the same but in our fields these persons are more important comparing with ones in control villages. Diseases which they pointed out as a serious one in their villages are corresponding with the results which was made from the in-patients data in Prapokklao Hospital by our previous team.

V-3-2 Publishing of Monthly "Village Medical Service News"

To educate medical officers and volunteers in project field, "Village Medical Service News" was published English and Thai language. Contents are the results of Medical Service and related informations.

V - 4 Research in Food Science

Forty two kinds of samples were surveyed in August and September 1981. All of samples were plastic containers for food; cup, dish, plate, bowl etc. They were made of polyethylene, polypropylene and melamine, which were sent from Food and Drug Administration, Association of Protection Consumer, Department of Industry at Ministry of Technology and Science, and Private company of plastics.

Elution test of them was carried out according to the following method; wash out a sample with distilled water. Fill up with an extraction solution (water or 4% acetic acid solution), which is heated to 60°C, and cover with a watch glass and keep the content at 60°C for 30 minutes with an occasional

Table I results of Elution Test for Plastics on August and September 1981

Date	No.	Company	Plastic		Phenol	Formal-dehyde	Consumption of $KMnO_4$	Heavy metals		Volatile residue	
			Kind	Shape	(ppm.)	(ppm.)	(ppm.)	Pb(ppm)	Cd (ppm)	H_2O (ppm)	4% CH_3COOH(ppm)
			Japanese Regulation		not detected	not detected	10	not more than 1 ppm as Pb		30	30
August 1981	1	A	Polyethylene	cup	ND	ND	0.47	0.01	ND	30.0	21.0
"	2	"	"	"	"	"	1.11	0.005	"	25.0	30.0
"	3	"	"	"	"	"	0.79	0.004	"	63.0	88.0
"	4	"	"	dish	"	"	ND	0.003	"	52.0	48.0
"	5	"	"	"	"	"	0.32	0.001	"	52.0	56.0
"	6	"	Melamine	cup	"	"	0.47	0.001	"	34.0	22.0
"	7	B	"	plate	"	"	1.90	0.016	0.245	115.0	2,037.0
"	8	"	"	dish	"	"	1.26	0.007	0.005	46.0	55.0
"	9	"	"	"	"	"	2.05	0.005	ND	80.0	103.0
"	10	"	"	"	"	"	0.63	0.086	0.003	7.0	39.0
"	11	"	"	"	"	"	7.11	0.012	ND	20.0	22.0
"	12	"	"	"	"	"	1.42	0.013	"	7.0	48.0
"	13	"	"	"	"	"	1.74	0.002	"	55.0	54.0
"	14	"	"	spoon	"	"	0.63	0.002	"	34.0	103.0
"	15	"	"	dish	"	"	0.95	0.001	"	28.0	61.0
"	16	"	"	"	"	"	2.53	0.004	"	43.0	106.0
"	17	"	"	"	"	"	3.00	0.001	"	5.0	10.0

Table I results of Elution Test for Plastics on August and September 1981 (continued)

Date	No.	Company	Plastic		Phenol	FORMAL-dehyde	Consumption of $KMnO_4$	Heavy metals		Volatile residue	
			Kind	Shape	(ppm)	(ppm)	(ppm)	Pb(ppm)	Cd(ppm)	H_2O (ppm)	4% CH_3COOH (ppm)
September	18		Polyethylene	bucket	ND	ND	1.58	0.004	ND	34.0	54.0
"	19		"	straw	"	"	0.47	0.01	"	58.0	50.0
"	20		"	"	"	"	0.63	0.003	"	54.0	51.0
"	21		"	"	"	"	0.31	0.013	"	48.0	47.0
"	22		"	plate	"	"	0.31	0.011	"	49.0	46.0
"	23		"	"	"	"	0.31	0.007	0.001	14.0	16.0
"	24		"	dish	"	"	ND	0.003	0.003	9.0	9.0
"	25		"	bowl	"	"	"	0.01	0.001	9.0	10.0
"	26		"	dish	"	"	0.95	0.009	ND	30.0	29.0
"	27		"	"	"	"	0.63	0.005	"	29.0	30.0
"	28		"	"	"	"	0.32	0.016	"	44.0	51.0
"	29		"	"	"	"	1.26	0.005	"	39.0	51.0
"	30		"	"	"	"	0.31	0.002	"	29.0	50.0
"	31		Polypropylene	"	"	"	0.95	0.005	"	20.0	30.0
"	32		"	"	"	"	1.89	0.032	"	13.0	18.0
"	33		"	"	"	"	0.31	0.001	"	12.0	27.0
"	34		"	"	"	"	0.95	0.001	"	1.0	12.0
"	35		"	plate	"	"	0.63	0.008	"	9.0	12.0
"	36		"	"	"	"	2.70	0.027	"	9.0	8.0
"	37		"	"	"	"	4.10	0.01	"	4.0	9.0
"	38		"	"	"	"	3.10	0.006	"	5.0	8.0
"	39		"	"	"	"	1.26	0.03	"	10.0	9.0

Table I results of Elution Test for Plastics on August and September 1981 (continued)

Date	No.	Company	Plastic		Phenol	Formal-dehyde	Consump-tion of	Heavy metals		Volatile residue	
			Kind	Shape	(ppm)	(ppm)	$KMnO_4$ (ppm)	Pb (ppm)	Cd (ppm)	H_2O (ppm)	4% CH_3COOH (ppm)
September 1981	40		Polypropy-lene	plate	ND	ND	0.10	0.016	ND	8.0	6.0
"	41		"	"	"	"	3.00	0.012	"	4.0	5.0
"	42		"	"	"	"	0.79	0.03	"	3.0	6.0

shaking. Using these test solutions, the following items were tested; phenol, formaldehyde, consumption of potassium permanganate, heavy metals and volatile residue.

These results are shown in Table I.

Phenol and formaldehyde were not contained in all samples. Concerning consumption of potassium permanganate and heavy metals, No. II & No. 7 gave considerably high values. On the other hand, there were many problems in volatile residue. When water and 4% acetic acid were used as extraction solvent, 45.2% and 54.8% of them were more than 30 ppm, respectively. According to Japanese regulation, these samples should be rejected. Especially, volatile residue of No. 7 was extremely large. This sample was yellow colored plate. In this case, coating agent of plate might be eluted with 4% acetic acid solution.

PROGRESS REPORT IV

THE PROMOTION OF PROVINCIAL HEALTH SERVICES PROJECT

(Chanthaburi Project)

October - December 1981

Department of Medical Sciences, Ministry of Public Health

Yod-se, Bangkok 1 Thailand

Distribution of copies :-

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Miss. Paradee Mamechai, Division of Provincial Health Laboratory Services

Progress Report No. IV

Project: Promotion of Provincial Health Services

October - December 1981

Inspite of the absence of the Japanese Team Leader, the works of this project have progressed steadily. Especially, the Activity III, water and restaurant checking from the view point of public health have started by good co-operation between staffs of PCMO and PHL in Chanthaburi. This work would accomplish the main purpose of our project, "Strengthening of epidemiological surveillance system".

Another activities have also progressed in the third quarter of this year.

PROGRESS REPORT

(October 1981 - December 1981)

ACTIVITY 1

I. Strengthening of the PHL as a clinical diagnostic laboratory

1. Clinical chemistry

The internal quality control programme, under the support of the Project for Promotion of Provinceal Health. has been discontinued since July 1981 dur to lack of supply of control sera. It is hoped that this activity will be resumed in 1982 when the control sera are supplied by the Project. However, the external quality control programmes, under the IEQAS and TEQAS have been run regularly at monthly interval.

2. Clinical Hematology

a. Number of white blood cell count, automated method : 6233

b. Number of red blood cell count, automated method : 5

c. Number of platelet count, phase-contrast method : 396

d. Number of test, Partial thromboplastin time : 5

e. Number of test, Prothrombin time : 43

3. Virology

a. Detection of HBs Ag and Anti HB_s

Sera from patients were examined for HB_sAg and Anti HB_s during October 1981 to December 1981

The results are shown in Table 1

Sources of specimen	HB_sAg			Anti-HB_s		
	No. of specimen	No.of positive	Percentage	No.of specimen	No.of positive	percentage
Patients	117	16	13.67	52	21	40.38

b. Serodiagnosis of DHF suspected patients

Two cases of recent DHF were detected among fifteen samples submitted during October 1981 - December 1981.

II. Strengthening of the PHL as a public health laboratory

1. Examination of fecas for surveillance of diarrheal diseases

1.1 Number of specimen from PCMO&district hospitals : 230

Number of specimen positive for enteropathogens : 32

1.2 Number of specimen from Prapokklao Hospital : 1480

Number of specimen positive for enteropathogens : 374

2. Bacteriologic examination of food and water

2.1 Water, number of specimen : 140

2.2 Food, number of specimen : 11

/III. Strenthening.....

III Strengthening of the SRL in the four district hospitals.

The laboratory activities of four SRL during the period of three months are listed as follows :

1. TANAI DISTRICT HOSPITAL

1.1 MICROBIOLOGY

- Gram stain -Pathogens = 6
- Gram stain -G.C. = 1
- AF stain - TB = 19
- Blood parasitology-Malaria = 1,621
- Stool parasitology-Protozoa Helminths = 339

1.2 HAEMATOLOGY

- Haematocrit = 255
- Haemoglobin = -
- WBC count = 162
- Diff.count = 249

1.3 URINE ANALYSIS = 245

2. KIUNG DISTRICT HOSPITAL

2.1 MICROBIOLOGY

- Gram stain- Pathogens = 22
- Gram stain- G.C = 22
- AF stain -TB = 30
- Wet preparation-Fungi = 2
- Blood parasitology- Malaria = 722
- Stool parasitology-Protozoa:Helminths = 37

2.2 HAEMATOLOGY

- Haematocrit = 322
- Haemoglobin = 322
- WBC count = 251
- Diff count = 502

2.3 URINE ANALYSIS = 34

3. LAEMSINGHA DISTRICT HOSPITAL

3.1 MICROBIOLOGY

- Gram stain - Pathogens = 3
- Gram stain - G.C. = 6
- AF stain- TB = 5
- Wet preparation-Fungi = 3
- Blood parasitology - Malaria = 143
- Stool parasitology-Protozoa:Helminths = 472

/3.2 Haematology

3.2 HAEMATOLOGY

- Haematocrit = 121
- Haemoglobin = 121
- WBC count = 52
- Diff.count = 52

3.3 URINE ANALYSIS = 261

4. PHONG NUM-RON DISTRICT HOSPITAL

4.1 MICROBIOLOGY

- Gram stain - Pathogens = 25
- Gram stain - G.C. = 11
- AF stain-TB = 24
- Blood parasitology-Malaria = 2,603
- Stool parasitology-Protozoa:Helminths = 120

4.2 HAEMATOLOGY

- Haematocrit = 54
- Haemoglobin = 38
- WBC count = 30
- Diff. count = 30
- Blood group. = 103
- Pregnancy test = 7

4.3 URINE ANALYSIS = 103

ACTIVITY II

Virus Research Institute

1. Arbovirology

1.1 Production and Standardization of arbovirus reagents.

Supply dengue type-3 antigens 10 amps. to virus diagnostic laboratory in PHL. Nonthaburi Province.

1.1.1 Production of antigen

-

1.1.2 Production of reference antisera.

-

1.2 Train personel in the field of arbovirology.

-

1.3 Give assistance or advice to PHL.

-

II. Respiratory Viruses.

2.1 Sero-epidemiological survey of respiratory viruses in Chantaburi.

2.1.1 Survey in nomal population in difference age group for antibodies to Influenza, Adeno and Respiratory Syncytial viruses.

Seroepidemiological survey of Adenovirus in Chantaburi

Sample size 207.

Age distribution 1 - 50 yrs.
Results are as follow:-

age group (year)	No. tested	NT antibody titer 1:4 (%)	1:4 - 1:32 (%)
1	25	18(72%)	7(28%)
1-2	30	15(50%)	15(50%)
3-4	27	9(33.3%)	18(66.7%)
5-9	25	5(20%)	20(80%)
10-19	25	6(24%)	19(64%)
20-29	25	10(40%)	15(60%)
30-39	25	10(40%)	15(60%)
40- 50	25	18(72%)	7(28%)
Total	207	91(43.96%)	116(56.04%)

The results showed that 44% of population at Chantaburi had no antibody. Adenovirus antibody gradually inurease from age under 1 year to highest liver (80%) at the age 5-9 years and then decrease in adult.

Seroepidemiological survey of RSV

Under testing.

Seroepidemiological survey of Adenovirus in Chantaburi
PREVALENCE OF ADENOVIRUS ANTIBODY
PER CENT POSITIVE
100
80
60
40
20
<1 1 3 5 10 20 30 40
AGE IN YEARS

Seroepidemiological survey of Influenza virus.

The level of influenza antibody were found in Chantaburi province by HI test from 208 sera of normal people.

- 50.9% have antibodies to A/Texas/1/77(H_3N_2)
- 28.4% have antibodies to A/Bangkok/1/79(H_3N_2)
- 39.9% have antibodies to A/Brazil/11/78(H_1N_1)
- 2.4% have antibodies to B/Singapore/222/79

Fig 1 Percent of population have antibodies to influenza virus

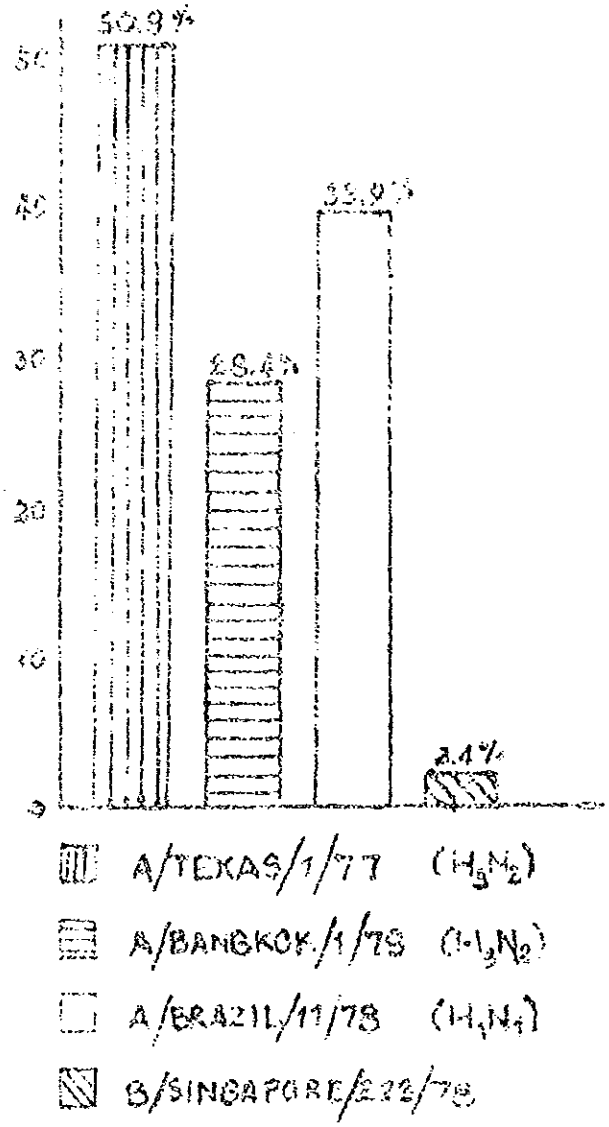
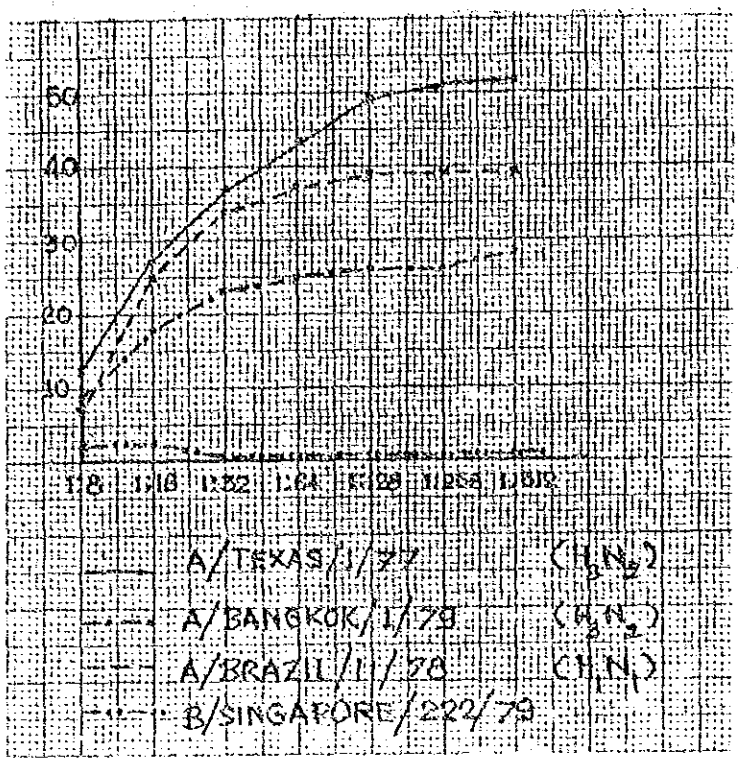
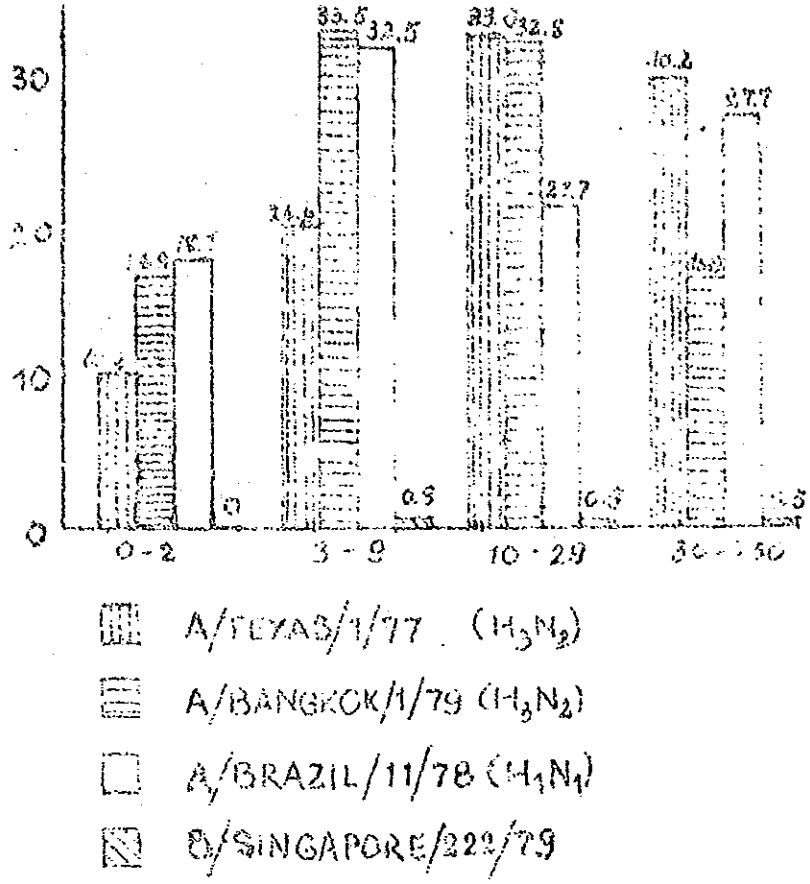


Fig II Cumulative percent of influenza antibody.



	1:8	1:16	1:32	1:64	1:128	1:256	1:512
A/Texas/1/77(H_3N_2)	13.0	26.4	37.0	43.7	49.5	50.5	50.9
A/Bangkok/1/79(H_3N_2)	9.1	16.3	23.1	25.5	25.9	26.4	28.4
A/Brazil/11/78(H_1N_1)	7.2	25.0	33.6	37.9	39.4	39.9	39.9
B/Singapore/222/79	1.4	2.4	0	0	0	0	0

Age grouping antibodies to influenza viruses.



Age group 0-2 has the lowest antibodies.

The other groups did not had any different in percent of antibodies.

Throat swab were collected for isolation of influenza virus. No isolation were found in 26 specimens.

Conclusion

Although A/Texas/1/77(H_3N_2) were found for many years but each age group of Chantaburi province had only 33%.

A/Bangkok/1/79(H_3N_2) had an epidemic in Bangkok but all age group in Chantaburi found not more than 34%.

A/Brazil/11/78(H_1N_1) has the highest percent at 32.5%/

Only rew have antibody to B/Singapore/222/79.

Activity II DME.

During the months of October to December 1982, the DME had carried out field studies in Chanthaburi as follows:-

1) Small scale field trial of ISA-2-OE against Anopheles immature mosquito in Makham district. ISA-2-OE or Isostearyl alcohol is a monomolecular oil derived from vegetable oil. The experiment was carried out at road side ditches where breed many kinds of mosquitoes the predominant species was Anopheles phillipinensis. Three applications at weekly interval were done in three experimental plots. The larval densities of the treated plots and check plot were dentermined pre and post each application. The results showed over 90% larval reduction in the treated plots while the check plot remained unchange. Fig I & II show the reduction of larval densities in the experimental plots compared to the check plot.

2) Mapping the area for rodent population study in Thamai. The study area divided into six zones each consisted of 40 to 100 houses. House to house mapping was done, each house had its label for sampling selection. The population study started the last week of December and will be continued in January & February.

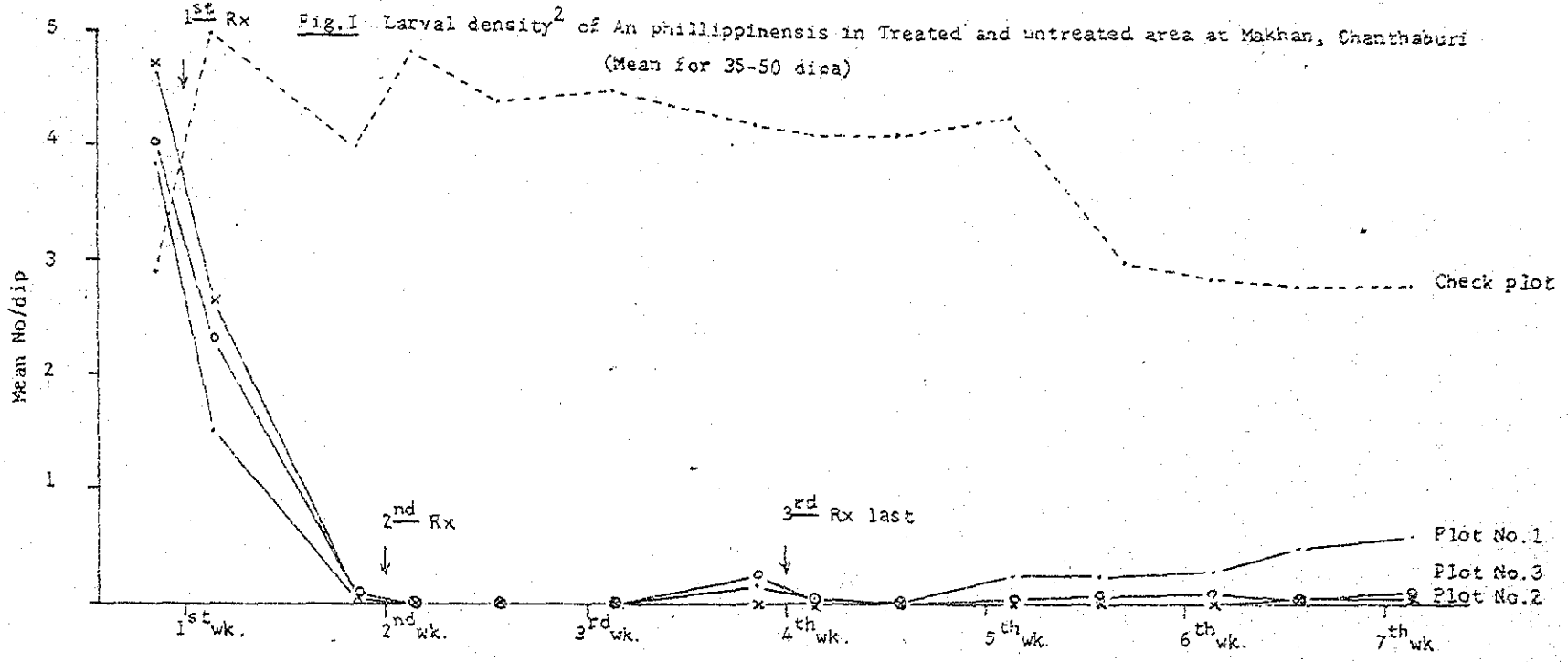


Fig.I Larval density[2] of An phillippinensis in Treated and untreated area at Makhan, Chanthaburi (Mean for 35-50 dips)

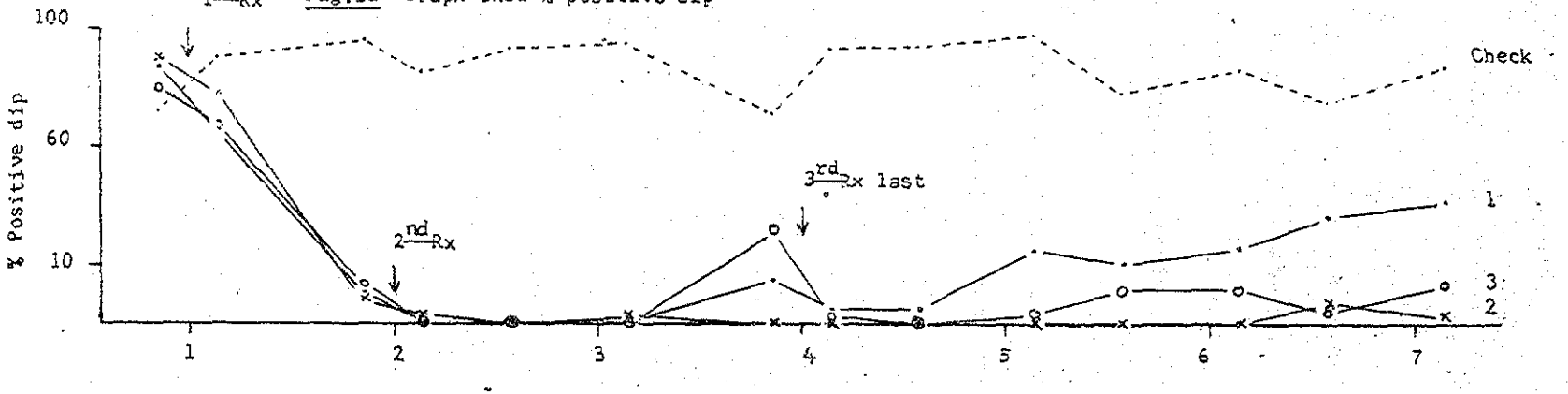


Fig.II Graph show % positive dip

Division of Clinical Pathology

Laboratory for Bacteriology

One hundred and forty-seven specimens of bacterial cultures were received from PHL Chanthaburi for serotyping as follows :-

S.typhi	1
Other Salmonella	10
Shigella	63
Enteropathogenic E.coli	10
Plesiomonas shigelloides	1
Vibrio parahaemolyticus	57
Other bacyeria	5
Total	147

Laboratory of Parasitology

Report of the examination for rat - endoparasites, that could be human infection, during January to March 1982.

Table 1 : Angiostrongylus cantonensis found in the lungs

Area	No. examined	No. pasitive
Thamai - Jan.	129	14
Feb.	217	8
March.	36	4
Total	382	26 (= 6.80 %)

Table 2 : Endoparasites of rats that could be human iufection

	No examined	No. pasitive		
		Hn	Hd	Rs
Thamai - Jan.	129	-	20	2
Feb.	217	-	23	2
March.	36	-	2	2
Total	382	-	45 (11.78 %)	6 (1.57 %)

Note: Hn = Hymenolepis nana
Hd = Hymenolepis diminuta
Rs = Raillietina Siriraji

Division of Food Analysis

The activities related to the project are as follows :

1. Twenty two samples of different kinds of supplied and drinking water collected from Chantaburi were anlysed at the Division of Food analysis for safety. It was found that 2 samples of bottle drinking water contain 0.57 and 0.83 ppm. of lead which is higher than the limited level (0.1 ppm).

2. Analytical method of plastic food container and food packages were introduced.

3. Method for detection of propionic acid by Gas Chromatograph was demonstrated.

Division of Provincial Health Laboratory Services

Chemical reagents, bacteriological media and antisera have been supplied regularly to PHL Chanthaburi and Chonburi and repair the equipment during October - December 1981.

Public Health Laboratory Service, Chonburi Province

Progressive work from October to December 1981

	October	November	December
1. Bacteriology	4,081	4,294	4,191
2. Serology	1,047	1,300	1,041
3. Parasitology	5,748	6,115	6,053
4. Mycology	486	517	405
5. Hematology	12,715	12,396	11,152
6. Clinical blood chemistry	4,953	5,945	4,570
7. Cerebrospinal fluid	202	394	294
8. Urine analysis	4,799	4,721	4,600
9. Sanitary	-	28	-
10. Reagent preparation	294,007 CC	295,509 CC.	270,010 CC.
11. Hepatitis B Antigen	14	6	20
12. Rabies	25	18	30
13. Protein Fraction	-	2	-
14. Hemoglobin typing	18	19	21

ACTIVITY III

The mobile medical service undertaken during October to December 1981 in the Model Area of the Project were as follows :-

19 October 1981: Tambol Tagad Ngao, Tha Mai District 101 cases

9 November 1981: Tambol Bo, Khlung District 81 cases.

14 December 1981: Tambol Sai Kao, Pongnamron District 146 cases.

ACTIVITY IV

There was no training activity during October - December 1981.

ACTIVITY V (Operational Research)

5.1 To make research on mosquito born diseases in the model area on virological, epidemiological and entomological studies.

5.1.1 Entomological and ecological studies on the arbovirus vector mosquitoes

Ecological studies of the arbovirus vector mosquitoes were carried out in Chanthaburi province:

1) Mosquitoes were collected by using light traps. The collections, totaling more than 5,700 individuals, are presented in Table 1 as the number per trap night. A total of 28 species of mosquitoes were collected which included Culex, 9 spp.; Anopheles, 9 spp.; Aedes, 2 spp.; Mansonia, 1 sp.; Coquillettidia, 1 sp.; Armigeres 1 sp.; Orthopodomyia, 1 sp; Mimomyia, 1 sp.; Aedeomyia, 1 sp. and Uranotaenia, 3 spp.

The species composition of light trap collections from both the rural and urban sites were similar.

Culex tritaeniorhynchus was the most abundant species, representing 51.4% of all mosquitoes collected. Greater numbers of Cx. tritaeniorhynchus were collected in November. In general, the number of mosquitoes decreased in December.

2) During October-December, a survey was made on mosquito breeding. A total of 17 species of mosquitoes were collected. Species, numbers and breeding sites are shown in Table 2.

5.1.2 To produce virus hemagglutinating antigen for laboratory examination. (Undertaken in the Virus Research Institute)

5.1.2.1 Rubella Virus

Preliminary experiments for the production of Rubella virus hemagglutinating antigen in tissue culture were carried out. From these experimental results, following matters were confirmed.

Summary of the result

(i) The M-33 strain of Rubella virus, which was carried from Japan, retained the activity to propagate in a monolayer culture of RK-13 Cells (derived from Rabbit kidney) and produce a clear cytopathogenic effect (CPE) in this culture system.

(ii) The M-33 strain of Rubella virus retained the ability to produce hemagglutinating (HA) antigen, at a level of 8-32 HA units per 0.025 ml, in a monolayer culture of PS Cells (derived from porcine kidney).

5.1.2.2 Dengue Virus

(i) Application of formalinized, freeze-dried, one-day-old chick erythrocytes (FDCRBCs) to the Dengue Virus (type 1) hemagglutination (HA) reaction was tested.

(ii) Application of phosphate buffered solution (PBS) to Dengue Virus (type 1) HA reaction was tested.

(iii) Comparison of attitude between
Dengue virus type 1 (D-1) and
Dengue virus type 2 (D-2) in their HA reactions was done.

Summary of the rusults

(i) FDCRBCs were agglutinated with the Dengue virus (type 1) HA antigen. The susceptibility of FDCRBCs for the HA antigen approximately the same extent as fresh, one-day-old chick erythrocytes (FCRBCs) in two kinds of diluents, BS 9.0* and PBS 7.0

* Note; BS 9.0, Borate Saline, pH 9.0,
developed by Clark and Casals (1958).

(ii) D-1 and D-2 showed some different attitudes on HA reaction in respect of their pH dependency. The HA reaction of D-1 expanded more acidic side (pH 5.2-5.8) than D-2 (Fig. 1).

5.2 To analyse on causative agents of G.I. disease in the model area

5.2.1 Microbiological Research for G.I. Diseases in Chanthaburi

In these three months, 1,478 fecal specimens of diarrheal cases from in-and-out-patients of Prapokklao Hospital and district hospitals in Chanthaburi province were examined for bacterial pathogens.

Pathogenic bacteria were isolated from 349 cases (23.6%). The strains which were isolated in these cases were: 2 strains of NAG vibrio, 147 of Shigella, 21 of Salmonella (including 1 of Salmonella typhi), 95 of Vibrio parahaemolyticus, 62 of Enteropathogenic Escherichia coli and 44 of Plesiomonas shigelloides. (see Table 3)

Beside routine works mentioned above, on the specimens collected on every Tuesday, additional examination to detect pathogenic bacteria have done. The total number of specimens which were examined from October to December was 168, and 48 of them (28.6%) were pathogen positive. The isolates from these specimens were: 1 strain of NAG vibrio, 14 of Shigella, 3 of Salmonella, 9 of Vibrio parahaemolyticus, 16 of Enteropathogenic E. coli and 7 of Plesiomonas shigelloides (see Table 4).

5.3 To search for efficient and effective implementation methods in community participation

5.3.1 Bacteriological and parasitological examination of fecal specimens collected in "Medical Services"

Bacteriological examinations of these specimens which were collected at Tagad Ngao, Bo and Sam Rong, to find out mainly healthy carrier.

In total 130 specimens were examined for Enteropathogenic bacteria, then we found 7 possitive cases (6.2%) (Table 5). The isolates from these were 1 strain of Shigella, 1 of Salmonella, 4 of Vibrio parahaemolyticus and 1 of Plesiomonas shigelloides.

About parasitological survey, no report were made until now, so all data of medical services of this year are showing in this progress report. (Table 6 and 7)

5.3.2 Monthly checking of water and ice for general uses

In these three months, this work was repeated three times and examined 68 specimens which were including 56 samples of drinking water and 12 of ice.

These samples were collected from 2 places of water supply, 3 public wells, 4 drinking water factories, 3 water containers of rain water and 4 ice factories (Table 8).

Total bacterial counts, coliform counts and detection of Pathogenic bacteria were tried every time, and from November, chemical checking of the same samples were begun to do.

Bacteriological examinations were tried in Chanthaburi P.H.L., and chemical examination were done to check 10 or 11 items in the Department of Medical Sciences, Bangkok.

Through the bacteriological examination, Plesiomonas shigelloides from the 2 samples of water which were collected from a water supply and a public well. By the chemical checking, much amount of Chemicals were detected from several samples as shown on Table 9 and 10, when compared with valve in Thai regulation for drinking water.

5.3.3 Bacteriological and Parasitological Examination of Restaurants

This action has been done to make sure the environmental background of restaurants in Chanthaburi. We tried to collect the samples from 18 targets, then, we got 70 samples including 17 wiping swabs of cooking wares, 17 wiping swabs of table wares, 5 samples of water for drinking, 15 samples of washing water and 16 samples of ice for drinking from 17 restaurants.

Through the bacteriological examinations of these samples, we found 6 of pathogen positive samples as shown on Table 11. The isolates were 2 strains of NAG vibrio, 4 of Vibrio parahaemolyticus and 1 of Plesiomonas shigelloides.

At the same time we tried to collect stools from men who were working at each restaurant, then we collect 99 specimens to check.

Through the examinations of these stools, we found 16 of pathogen positive ones, then we isolated 1 strain of Salmonella, 11 of Vibrio parahaemolyticus, 2 of Enteropathogenic Escherichia coli and 2 of Plesiomonas shigelloides (Table 12), and Parasitological results are shown on Table 13 & 14..

5.4 To make rodent and other research in medico-zoological field in the model area

Studies of this theme were not carried out in the third quarter of 1981, Project fiscal year, but these researches will be taken place from January 1982.

5.5 To make researches in other related fields as :

5.5.1 Determination of L-Glutamic acid (L-Glutamate) in Fish Sauces and Instant Noodles

In Thailand L-glutamic acid (L-glutamate) is widely used for many foods especially in fish sauces and instant noodles. Fish sauces are the most popular sauce in Thailand and is used to cook every kinds of Thai foods. It is made of small fish after fermenting with sodium chloride solution. On the other hand instant noodles are conveniently used for Thai lunch or supper. For these foods, L-glutamic acid (L-glutamate) is somethimes added in order to supply amino acid or to season the foods.

In Thailand quality standard of fish sauce have been settled as follows: Sodium chloride content should be more than 200 g/l, total nitrogen should be more than 9 g/l in pure fish sauce and more than 4 g/l in mixed fish sauce, and the ratio of L-glutamic acid (L-glutamate) to total nitrogen should be 0.4-0.6 in pure fish sauce and 0.4-1.3 in mixed fish sauce.

The quality standards of instant noodle have been settled as follows: L-glutamic acid (L-glutamate) content should be not more than 0.96% in powder sauce and not more than 0.04% in noodle.

L-Glutamic acid (L-glutamate) was determined by enzymatic method using glutamate dehydrogenase and total nitrogen was determined by digestion, distillation and titration. By this method many commercial fish sauces (pure and mixed) were analyzed, and the results are shown in Table 15.

L-Glutamic acid (L-glutamate) contained in samples were widely ranged from 2.3-41.3 g/l, and the contents were sometimes composed of natural and artificial one. Total nitrogen of 5 samples in mixed fish sauces were less than 4 g/l.

From these two kinds of values, the ratio of L-glutamic acid (L-glutamate) to total nitrogen was estimated.

In the case of pure fish sauces, only two samples (16.6%) were under the limit. In the case of mixed fish sauces, 11 samples (45.8%) were over the limit. When the ratio was very high, L-glutamic acid (L-glutamate) was surely added to the sample.

Many commercial instant noodles (noodle and powdered soup) were analyzed, and the results are shown in Table 16. In the case of noodles, preparation of sample solution was necessary. Five g of sample was boiled with 60 ml of water for 15 min., filled up to 100 ml, and then filtered. In order to determine L-glutamic acid (L-glutamate), enzymatic method was applied to the filtrated sample solution. As the results, it was found that all of the samples were under the limit.

These samples were surveyed from October till December 1981.

5.5.2 Hycienic surveys of plastics in Thailand

27 samples of plastic milk bottles and those caps (imported from foreign countries), 15 samples of plastic bottles for vegetable oil and those caps (made in Thailand) were surveyed from October till December in 1981. Milk bottles were made of polycarbonate and those caps were made of polypropylene. Bottles for vegetable oil were made of polyvinylchloride and those caps were made of polypropylene. All of them were carried out by migration test, moreover polyvinylchloride were carried out by material test.

These results are shown in Table 17 and 18. Table 1 shows that polycarbonates had no problems but polypropylenes had problems for volatile residue. When 4% acetic acid was used as solvent, volatile residues of 4 samples (14.8%) were over limit.

Table 2 shows that polyvinylchloride had no problems but polypropylene had serious problems for volatile residues of 12 samples (80%). When n-heptane was used as solvent, the values gave extremely high values.

Table 1. Mosquitoes collected in light traps at five districts in Chantaburi Province, October - December 1981.

Species	Muang *			Pak Nam Kra-chae ***			Taqad Ngao **			Laem Sing *			Pong-Namron **		Total	%
	O	N	D	O	N	D	O	N	D	O	N	D	O	N		
ılex tritaenior-ıynchus	93	201	160	18	20	4	42	1920	36	213	140	88	7		2942	51.4
:. gelidus	81	224	114	3	7	16	5	30	0.5	8	18	9		1	516.5	9.0
:. fatigans	9	94	81		5	2					2	1		1	195	3.4
:. fuscocephala	15	10	2	2	4	5	2	9		1	9	3			62	1.1
:. hutchisoni	6	0.3	5				0.5		0.5	0.3			5	2	19.6	0.3
:. sinensis				2					1	2					5	-
.. bitaenior-ıynchus	0.3		1		1	0.5									2.8	-
:. sitiens		0.3	1							0.3	0.5				2.1	-
.. foliatus				8	1		13	16		3	0.5				41.5	0.7
.nsonia ınnulifera	19	66	27	13	8	7	78	241	3	9	28	11	1		511	8.9
ıquillettidia :rassipes	15	6	8	1	3	6				2	0.5	4			45.5	0.3
migeres subal-ıatus	1	1								1	2	2	1		8	-
thopodomyia ınopneloides				55	88	13	16	27		24	16	13			252	4.4
ıopheles(A) esteri ıaraliae	1	1			0.5			2							4.5	-
(A) sinensis					0.5			14							14.5	-
(A) barbirostris	1	2	0.3					4		1	3				11.3	-
.A) peditaeniatus	0.3	4	3	83	6	1	34	363			4	2	22		522.3	9.1
.A) argyropus				8	0.5		1	13							22.5	0.4
(C) tesselatus			0.3	0.5				3							3.8	-
.C) subpictus	3	3	2	5	0.5	0.5	23	32	9	1					79	-
.C) philippin.	1	0.3	0.3	17		0.5		6			2	1	6	1	35.1	0.6
C) aconitus	1	4	3	0.5	5		9	67	0.5		1			1	92	1.6
ıdes aegypti				4											4	-
:. albopictus				0.5						0.3					0.8	-
ıomyia hybrida	14	25	13	1	2	0.5			0.5	0.3		5			61.3	1.1
ıdeomyia :atasticta	15	22	6		3	1		5		1	4	3			70	1.2
ıuotaenia ıdwardsi		4	6		16	9	1		1		9	3			49	0.9
. sp. 8	13	28	18	15	4	8		7		13	5	22			133	2.3
. sp. 11	1		1			2		8				4			16	-

* Nozawa's light trap ; ** CDC light trap (battery operated)

*** Monks wood light trap (battery operated)

Table 2. Number of occurrences of mosquitoes larva, October - December, 1981

Species \ Breeding sites (Number observed)	Puddle (10)	Swamp (2)	Pond (1)	Canal (1)	Pit (1)	Well (1)	Artificial container (1)	Bamboo (1)	Rubber grove (1)	Banana axil (1)	Ant guard (2)	Total (22)
Culex fatigans											22	22
Cx. tritaeniorhynchus	2	3										5
Cx. bitaeniorhynchus	4	2										6
Cx. sitiens		1										1
Cx. (Lophoceraomyia) sp.	21	1				2	1					25
Aedes albopictus								4	17		4	25
Tripteroides aranoides								27				27
Anopheles (A) peditaeniatus	14	3			1							18
A(A) lesteri palariae					1							1
A(A) baezai					5							5
A(C) balabacensis	11											11
A(C) philippinensis	52	28	13	123								216
A(C) karwari	2											2
A(C) kochi						18						18
Orthopodomyia anopheloides			4	1								5
Malaya genurostris										7		7
Uranotaenia sp.	8											8

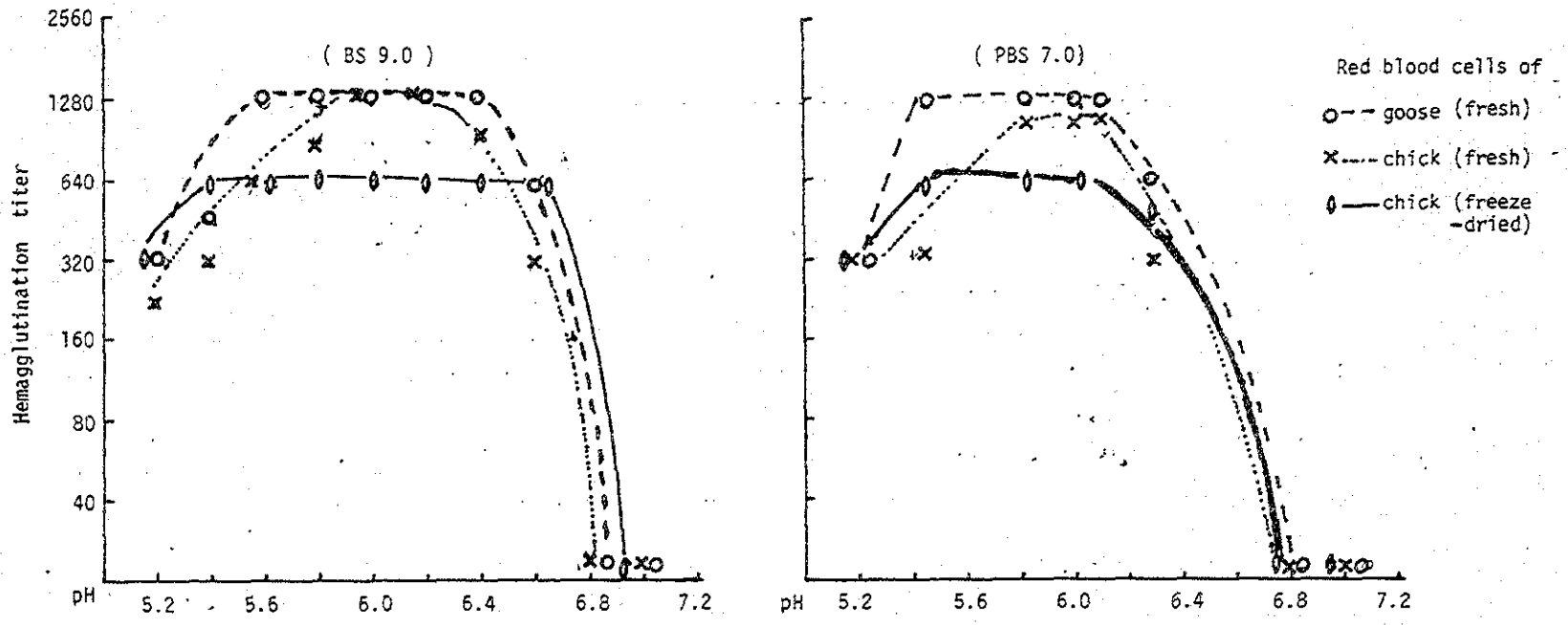


Fig.1 HEMAGGLUTINATING REACTION OF DENGUE VIRUS TYPE 1

Application of Freeze-Dried, One-Day-Old Chick Erythrocytes and Phosphate-Buffered Saline to Hemagglutination Test

By A. Sompop, B. Kruawan and H. Ito.

Table 5. Isolation of Enteropathogenic Bacteria from Fecal Specimens of Diarrheal Cases among In and Out-Patients of Prapokklao and District Hospitals in Chanthaburi (Oct.-Dec., 1981)

Month	No. of Specimens examined	No. of pathogen positive cases (%)	No. of isolates (mixed infect.)	Pathogen													
				V. cholera		Shigella				Salmonella		V.para	E. coli			Group F	P.shige
				O-1	NAG	A	B	C	D	T.G.	Others		I- III	IV,V			
Oct.	325	66(20.3%)	71 (5)	-	1	1	24	-	5	1	2	14	9	7	-	7	
Nov.	518	156(30.1%)	169(13)	-	-	8	52	-	10	-	10	48	9	6	-	26	
Dec.	635	127(20.0%)	131(4)	-	1	3	35	-	9	-	8	33	12	19	-	11	
Total	1,478	349(23.6%)	371(22)	-	2	12	111	-	24	1	20	95	30	32	-	44	

T.G.--- Typhoid group, V. para.---Vibrio parahaemolyticus, P. shige.--- Plesiomonas shigelloides

Table 4. Isolation of Enteropathogenic Bacteria from Fecal Specimens of Diarrhea Cases among In and Out-Patients of Hospitals in Chanthaburi on Every Tuesday (Oct.-Dec., 1981)

Date	No. of specimens examined	No. of pathogen-possitive cases (%)	No. of isolates (mixed infect.)	Pathogen								
				V. cholera O-1	V. cholera NAG	Shigella	Salmo-nella	V. parahae molyticus	E. coli	Campylo-bactor	Groupp	P.shige
Oct. 6	12	2(16.7%)	2	-	-	1	-	-	1	-	-	-
13	8	4(50.0%)	4	-	1	1	-	-	2	-	-	-
22	15	3(20.0%)	3	-	-	2	-	-	1	-	-	-
27	8	4(50.0%)	4	-	-	1	-	1	1	-	-	1
Nov. 17	26	13(50.0%)	14(1)	-	-	4	1	3	3	-	-	3
24	13	4(30.8%)	4	-	-	-	1	2	-	-	-	1
Dec. 1	17	9(52.9%)	9	-	-	3	-	-	4	-	-	2
8	25	-	-	-	-	-	-	-	-	-	-	-
15	18	7(38.9%)	8(1)	-	-	1	-	3	4	-	-	-
25	26	2(7.7%)	2	-	-	1	1	-	-	-	-	-
Total	168	48(28.6%)	50(2)	-	1	14	3	9	16	-	-	7

P. shigel.--- Plesiomonas shigelloides

Table 5. The results of examination of fecal specimens colleted in "Medical Services"

Village and Date	Range of Age	No. of specimens examined	Results	
			Bacteria	Parasite
Tagad Ngao	-6	4	V. parahaemolyticus(1)	
October 18 1981	7-15	4	V. parahaemolyticus (1)	
	16-20	0		
	21-	10	V. parahaemolyticus (2)	
	unknown	0		
Subtotal		18	(positives; 22.2%)	
Bố	-6	15		
December 15 1981	7-15	20		
	16-20	6		
	21-	12	Shigella gr. B(1) Salmonella gr. E(1) V. parahaemolyticus(1)	
	unknown	0		
Subtotal		53	(positives:5.8%)	
Sam Rong	-6	18	P.shigelloides (2)	
December 14 1981	7-15	6		
	16-20	2		
	21-	27		
	unknown	6		
Subtotal		59	(positives: 3.4%)	
	Total	130	(positives: 6.2%)	

Table 6 Results of Parasitological Survey on Four Tambons in 1981.

Name of Tambon	Male								Female							
	No. of examined	No. of positive	Ss	Ev	To	H.W	Al	Td	No. of examined	No. of positive	Ss	Ev	To	H.W	Tt	Mt	Op
Pliu	130	61		1	8	51	1		103	31		1	3	27			
Tagad-Ngao	136	12		2		10			148	21		1		18	1	1	
Bo	109	32		1	2	29			158	49	2		3	43			1
Sai Kao	226	40	1	1	2	35		1	201	32	3		1	27			1
TOTAL	601	84	1	5	12	125	1	1	601	133	5	2	7	115	1	1	2

Ss = *Strongyloides stercolaris*
Ev = *Enterobius vermicularis*
To = *Trichostrongylus orientalis*
HW = Hook Worm
Tt = *Trichuris trichiura*
As = *Ascaris lumbricoides*
Mt = *Metagonimus* sp.
Op = *Opistorchis* sp.
Td = Taenidae sp.

Table 7. The Relationships between Hook Worm Infection, Age and Sex of Individuals in Four Tambons in Chantaburi Province.

Village	Age-Group	Male		Female		Total		
		No.of exam.	No.of posit	No.of exam.	No.of posit	No.of exam.	No.of posit	%
Plin	Under 10	35	4	27	4	62	8	12.9
	11 - 20	68	31	48	12	116	43	36.4
	21 - 30	6	5	10	4	16	9	56.3
	31 - 40	5	4	6	1	11	5	45.5
	41 - 50	8	4	6	5	14	9	64.3
	Over 50	8	3	6	1	14	4	28.6
	Total	130	51	103	27	233	78	33.5
Tagad Ngao	Under 10	65	4	66	11	131	15	11.5
	11 - 20	25	3	26	3	51	6	11.8
	21 - 30	9		8		17		-
	31 - 40	13		19	3	32	3	9.4
	41 - 50	8		7		15		-
	Over 50	16	3	16	1	32	4	12.5
	Unknown			6		6		-
	Total	136	10	148	18	284	28	9.9
Bo	Under 10	55	7	51	6	106	13	12.3
	11 - 20	20	11	36	13	56	24	42.9
	21 - 30	2	1	17	7	19	8	42.1
	31 - 40	11	5	15	5	26	10	38.5
	41 - 50	5	1	14	6	19	7	38.9
	Over 50	11	3	22	3	33	6	18.2
	Unknown	5	1	3	3	8	4	
	Total	109	29	158	43	267	72	30.0
Sai Kao	Under 10	68	4	66	2	134	6	4.8
	11 - 20	23	8	21	3	44	11	25.0
	21 - 30	26	2	31	3	57	5	8.8
	31 - 40	25	7	15	1	40	8	20.0
	41 - 50	21	4	11	4	32	8	25.0
	Over 50	25	3	25	5	50	8	16.0
	Unknows	38	7	32	9	70	16	
	Total	226	35	201	27	427	62	14.5
Grand Total		601	125	610	115			
Positive % of sex		20.8		18.9				

* This table shows about hook worm infection only

Table 8 Results of "Monthly checking of water and ice"

P.H.L. Chanthaburi (Oct. 26,28, 1981)

Sampling No.	Target No.	Sample	Results					Detection of Pathogen
			Total B.C.	E.coli	Coliform	pH	Cl^-	
1	T1	Final Water	3	-	0	6.8	(-)	-
2	T2	Final Water	50	-	0	<6.0	(-)	-
3	T5	Well Water	50	-	0	<6.0	(-)	-
4	T6	Original W.	4	-	0	<6.0	(-)	-
5	T6	Final Prod.	21	-	0	6.2	(-)	-
6	T9	Original W.	0	-	0	7.0	(-)	-
7	T9	Final Prod.	300	-	0	6.8	(-)	-
8	T10	Rain Water	200	-	6	7.6	(-)	-
9	T11	Rain Water	100	-	2	>7.6	(-)	-
10	T12	Rain Water	NT	NT	NT	NT	NT	NT
11	T13	Treated W.	0	-	0	<6.0	(-)	-
12	(old)	Well(school)	NT	NT	NT	NT	NT	NT
13	(new)	"	3	-	0	6.8	(-)	-
21	T3	Well Water	200	-	4	<6.0	(-)	-
22	T4	Well Water	6	-	0	<6.0	(-)	-
23	T7	Original W.	100	-	10	<6.0	(-)	-
24	T7	Final Prod.	100	-	10	<6.0	(-)	-
25	T8	Original W.	NT	NT	NT	NT	NT	NT
26	T8	Final Prod.	300	-	10	7.4	(-)	-
27	T14	Treated W.	30	-	0	<6.0	(-)	-
28	T15	Treated W.	68	-	4	<6.0	(-)	-
29	T16	Treated W.	10	-	2	7.0	(-)	-
31	T13	Ice	0	-	0	7.2	(-)	-
32	T14	Ice	5	-	0	6.7	(-)	-
33	T15	Ice	12	-	0	6.0	(-)	-
34	T16	Ice	10	-	0	6.8	(-)	-

Total B.C.: Total Bacterial counts (/g) Cl^-: p.p.m.

NT: Not Tested

Table 9 Results of "Monthly checking of water and ice" collected in Chanthaburi

(Nov.23,25,1981)

Sampling No.	Target No.	Sample	Results of Bacteriological Examinations: Total B.C.	Coliform	pH	Pathogens	Results of Chemical Examination (Unit=p.p.m.): NH_3	NO_2	NO_3	$KMnO_4$	Solid	Hardness	Cl^-	F^-	Fe^{3+}	Pb^{2+}
1	T1	Final Water	10	0	7.0	P.shigeloides	0.001	0.001	0.067	2.53	29	25	ND	ND	0.16	ND
2	T2	Final Water	0	0	7.3	-	0.001	0.001	0.042	1.74	40	39	7.0	ND	0.61	ND
3	T5	Well Water	0	0	<6.0	P.shigeloides	0.001	0.001	ND	0.63	10	19	4.2	ND	0.29	ND
4	T6	Original W.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
5	T6	Final Prod.	60	0	<60	-	0.001	0.001	ND	0.63	5	5	ND	ND	0.08	ND
6	T9	Original Water	0	0	7.1	-	0.001	0.001	ND	3.16	110	18.5	3.5	ND	0.51	ND
7	T9	Final Prod.	58	1	6.9	-	0.001	0.001	ND	0.63	55	89	8.0	ND	0.17	ND
8	T10	Rain Water	35	12	7.5	-	0.001	0.001	ND	2.05	29	51	ND	ND	0.55	ND
9	T11	Rain Water	100	3	7.5	-	0.001	0.004	0.053	2.84	27	59	ND	ND	0.40	0.11
10	T12	Rain Water	140	50	7.5	-	0.001	0.001	0.050	1.58	54	101	3.2	ND	0.21	ND
11	T13	Treated W.	10	0	<6.0	-	0.001	0.014	2.750	0.63	59	15	19.5	ND	0.29	ND
12	Old well	Well(school)	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
13	New well	Well(school)	52	0	6.0	-	0.900	0.004	0.208	0.95	45	55	7.2	ND	0.62	ND
21	T3	Well Water	20	0	<6.0	-	0.034	0.024	0.048	2.53	534	90	195.5	ND	0.56	0.16
22	T4	Well Water	310	4	<6.0	-	0.001	0.001	0.085	1.89	87	10	11.0	ND	0.11	ND
23	T7	Original W.	50	0	<6.0	-	0.029	0.003	0.025	1.89	159	8	49.3	ND	0.10	0.83
24	T7	Final W.	2,200	200	<6.0	-	0.009	0.001	0.022	0.32	135	30	52.9	ND	0.10	0.57
25	T8	Original W.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
26	T8	Final Prod.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
27	T14	Treated W.	150	0	<6.0	-	ND	0.002	0.056	1.58	78	14	7.3	ND	0.25	ND
28	T15	Treated W.	580	0	<6.0	-	0.015	0.001	0.011	2.21	30	14	7.3	ND	0.25	0.15
29	T16	Treated W.	330	0	7.3		0.005	0.001	0.002	1.58	19	14	1.8	ND	0.20	ND
31	T13	Ice	5	0	7.0	-	0.100	0.005	3.250	5.48	78	25	24.6	ND	1.06	0.10
32	T14	Ice	64	0	6.6	-	0.001	0.021	0.001	1.74	28	2	1.8	ND	0.08	ND
33	T15	Ice	1,960	0	6.7		0.001	0.001	ND	0.79	10	2	ND	ND	0.14	ND
34	T16	Ice	116	0	6.6	-	ND	0.001	ND	1.26	11	6	ND	ND	0.11	ND
Thai Regulation							0.1	0.1	4	-	1,000	300	250	1.5	0.50	0.1
Japanese Regulation							ND	ND	3	3-5	200	100	30	0.8	0.07	0.1

Total B.C.: Total Bacterial counts(/g), Coliform: Coliform: Coliform counts (/g), $KMnO_4$:Consumption of $KMnO_4$, Solid:Total Solid, Hardness:Total Hardness

Table 10 Results of "Monthly Checking of Water and Ice" collected in Chanthaburi

(Dec. 21,23,1981)

Sampling No.	Target No.	Sample	Results of Bacteriological Examinations				Results of Chemical Examination (Unit=p.p.m.)									
			Total B.C.	Coliform	pH	Pathogens	NH_3	NO_2	NO_3	$KMnO_4$	Solid	Hardness	Cl^-	F^-	Fe^{3+}	Pb^{2+}
1	T1	Final Water	4	0	(5.85)	-	ND	ND	0.001	1.264	0.64	14	2.48	ND	0.30	0.01
2	T2	Final Water	40	0	(6.85)	-	0.001	ND	0.002	1.422	0.73	14	1.77	ND	0.31	0.01
3	T5	Well Water	260	0	(5.15)	-	0.001	0.003	0.001	0.474	0.75	8	2.48	ND	0.14	0.01
4	T6	Original W.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
5	T6	Final Prod.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
6	T9	Original Water	0	0	(6.8-)	-	ND	0.002	0.001	1.580	1.50	86	8.51	ND	0.06	0.01
7	T9	Final Prod.	10	0	(6.50)	-	ND	ND	0.001	0.790	1.11	78	5.32	ND	0.04	0.01
8	T10	Rain Water	120	8	(6.80)	-	0.002	0.006	0.004	1.264	1.34	102	3.30	ND	0.04	ND
9	T11	Rain Water	290	12	(7.35)	-	ND	0.005	0.005	0.948	1.57	94	3.30	ND	0.02	ND
10	T12	Rain Water	5	0	(7.40)	-	ND	0.007	0.002	0.580	1.13	88	6.38	ND	0.04	ND
11	T13	Treated W.	1	0	(5.10)	-	0.002	ND	0.118	0.516	1.02	15	16.66	ND	0.05	ND
12	Old well	Well(school)	10	0	(4.95)	-	ND	0.005	0.120	1.264	1.15	18	12.76	ND	ND	ND
13	New well	Well(school)	23	0	(5.35)	-	0.110	0.002	0.013	ND	1.16	16	7.45	ND	0.14	ND
21	T3	Well Water	200	0	(5.55)	-	0.002	0.015	0.127	2.054	4.67	98	97.30	ND	0.25	ND
22	T4	Well Water	150	5	(4.30)	-	ND	ND	0.184	ND	0.14	15	7.27	ND	0.04	ND
23	T7	Original W.	20	0	(4.90)	-	0.011	ND	0.022	1.896	1.12	53	33.86	ND	0.07	0.45
24	T7	Final W.	30	0	(4.95)	-	ND	ND	0.029	2.054	0.84	34	33.15	ND	0.06	0.56
25	T8	Original W.	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
26	T8	Final Prod.	50	0	(6.95)	-	ND	ND	ND	ND	0.07	30	2.48	ND	0.07	ND
27	T14	Treated W.	20	0	(5.00)	-	ND	ND	0.071	0.948	0.09	8	5.50	ND	0.08	ND
28	T15	Treated W.	24	0	(5.70)	-	ND	ND	0.015	1.580	0.03	15	5.49	ND	0.05	ND
29	T16	Treated W.	25	0	(5.65)	-	ND	ND	0.001	2.212	0.06	17	2.66	ND	0.15	ND
31	T13	Ice	10	0	(5.45)	-	ND	0.001	0.002	1.896	0.44	2	2.48	ND	0.01	ND
32	T14	Ice	0	0	(5.25)	-	ND	ND	0.001	1.244	0.09	5	1.95	ND	0.03	ND
33	T15	Ice	0	0	(5.55)	-	ND	ND	ND	2.210	0.11	2	1.95	ND	0.03	ND
34	T16	Ice	0	0	(NT)	-	0.046	NT	NT	ND	0.26	5	1.77	ND	0.02	ND
Thai Regulation			(6.5-7.5)				0.1	0.1	4	-	1,000	300	250	1.5	0.50	0.1
Japanese Regulation			(5.8-8.6)				ND	ND	3	3-5	200	100	30	0.8	0.07	0.1

Total B.C.: Total Bacterial counts(/g), Coliform: Coliform: Coliform counts (/g), $KMnO_4$:Consumption of $KMnO_4$, Solid:Total Solid, Hardness:Total Hardness

Table II Result of the "Bacteriological checking of Restaurant" (or "Checking of Food-shops") — Chanthaburi P.H.L., 1981 —

Target No. (T-No.)	Name of Target	RESULTS OF EXAMINATION: S-No.1 (Cooking wares)	S-No.2 (Table wares)	S-NO.3 (Drinking water)			S-No.4 (Washing water)			S-No.5 (Ice fordrink)		
		Pathogenic bacteria	Pathogenic bacteria	Pathogen	Coli-form	Total bact. c.	Pathogen	Coli-form	Total bact.c.	Pathogen	coli-form	Total bact.c.
1	อีสเทอร์นคอฟฟี่ชอพ (Estern Coffeeshop)	-	-	NC	NC	NC	-	2.0 x10^2	3.0 x10^3	-	2	1.8x10
2	เป็ดทอง (Petong)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
3	สวนปาลม (Syabpim)	-	NAG	NC	NC	NC	NAG	NT	NT	-	NT	NT
4	เรือนไทย (Ruanthai)	-	-	NC	NC	NC	NC	NC	NC	-	5.2x10	4.3 x10^2
5	เกียรติขจรคอฟฟี่ชอพ (Kiadkachorn Coffeeshop)	-	-	NC	NC	NC	-	0	0	-	2	7
6	เอื้อนขวัญ (Ouankwun)	-	-	NC	NC	NC	-	2.4 x10^2	1.0 x10^3	NC	NC	NC
7	หมอกเมืองเหนือ (Monmuangnua)	-	-	NC	NC	NC	-	3.2x10	4.0 x10^2	-	0	1.0 x10^2
8	แซ่บอีหลี (Sabeelee)	-	-	NC	NC	NC	-	2.0 x10^3	3.6 x10^3	-	3.0 x10^2	1.2 x10^3
9	แทรเวลลอดจ์คอฟฟี่ชอพ (Travellodge Coffeeshop)	-	P. shigel. GV. para.	-	0	9	-	1.3 x10^2	2.1 x10^2	-	0	5.6x10
10	ปูแป้น (Poopan)	-	-	NC	NC	NC	NC	NC	NC	-	0	4
11	พงษ์กี่ 1 (Pongkee 1)	-	-	-	6.5x10	3.4x10^2	-	1.0 x10^3	3.0 x10^4	-	1.0 x10^2	3.0 x10^2
12	พงษ์กี่ 2 (Pongkee 2)	-	-	-	2.0x10^3	3.5x10^3	-	7.1 x10^2	1.6 x10^3	-	3.3 x10^2	7.7 x10^2
13	อึ้งไฮเม้ง (Oeng-hai-meng)	-	V. para	-	2	3.6x10^3	V. para.	2.0 x10^3	(200)	-	1.9x10	2.7 x10^2
14	ตังเก (Tungke)	-	-	NC	NC	NC	-	1.3 x10^3	3.0 x10^3	-	1.0 x10^2	6.0 x10^3
15	ปูจ๋า (Poocha)	-	-	NC	NC	NC	-	2.0 x10^2	2.0 x10^4	-	0	1.8x10
16	ทะเลเลิศรส (Talelirdrod)	V.Para.	-	NC	NC	NC	-	2.0 x10^2	3.0 x10^3	-	0	1.0x10
17	ก๋วยเตี๋ยวลูกชิ้น (Kuaytiaw-lookchin)	-	-	NC	NC	NC	-	NT	NT	-	NT	NT
18	ก๋วยเตี๋ยวปู (Kuaytiaw-poo)	-	-	-	0	1.0x10^3	-	9	1.0 x10^2	-	6.5x10	4.4 x10^3

Tables 12: The results of examinations of stools collected from restaurants (or food-shops)

Target No. (T-No.)	Name of Target	No. of samples examined	No. of pathogen-possitive cases		Positive cases
			Bacteria	Parasite	Bacteria
1	อีสเทอร์นคอฟฟี่ช็อป (Estern Coffeeshop)	14	2		V. parahaemolyticus (2)
2	เปิดตง (Petong)	0	NC		NC
3	ศยามพาม (Syabplm)	13	0		(-)
4	เรือนไทย (Ruanthai)	0	NC		NC
5	เกียรติจรคอฟฟี่ช็อป (Kiadkachorn Coffeeshop)	10	4		Salmonella gr. E(1), E. coli gr. III(1), E. coli gr.V(1), P. shigelloides (1)
6	เดือนควัน (Duankwun)	0	NC		NC
7	มนต์เมืองเหนือ (Monmuangnua)	3	1		V. parahaemolyticus (1)
8	แซบอีหลี (Sabeelee)	8	2		V. parahaemolyticus (2)
9	เทร เวลลอดจคอฟฟี่ช็อป (Travellodge Coffeeshop)	13	0		(-)
10	ปูพัน (Poopan)	9	2		V. parahaemolyticus (2)
11	พงษ์กี 1 (Pongkee 1)	0	NC		NC
12	พงษ์กี 2 (Pongkee 2)	0	NC		NC
13	อึ่งไฮเม่ง (Oeng-hai-meng)	7	3		V. parahaemolyticus (1), V. parahaemolyticus & P. shigelloides (1)
14	ตังเก (Tungke)	12	2		V. parahaemolyticus (1), V. parahaemolyticus & P. shigelloides (1)
15	ปูจา (Poocha)	3	0		(-)
16	ทะเลเฉิดรส (Talelirdrod)	1	0		(-)
17	กวยเตี๋ยวลูกชิ้น (Kuaytiaw-lookchin)	4	0		(-)
18	กวยเตี๋ยวปู (Kuaytiaw-poo)	2	0		(-)

NC... No returning of specimens from the restaurants

Table 13 The Results of Parasitological Examination on Restaurant's Workers in Chantaburi City.

Target	Number of Examined	Number of Positive	Parasites				%
			Hook Worm	St. st.	Tr. tr.	Cl. sp.	
1	14	3	3				
3	10	3	3				
5	10	3	3				
7	3	0					
8	8	4	4				
9	15	9	7	1		1	
10	9	3	3				
13	7	3	3				
14	12	3	2		1		
15	3	2	2				
16	1	0					
17	3	0					
18	2	0					
Total	97	30	27	1	1	1	30.9

St.st.= Strongyloides stercolaris
Tr.tr.= Trichuris trichiura
Cl.sp.= Clonorchis sp.

Table 14 The Relationships between Hook Worm Infection, Age and Sex of Restaurant Workers in Chantaburi City.

Age-Group	Male			Female		
	No. of Examined	No. of Positive	%	No. of Examined	No. of Positive	%
Under 10	-	-	-	-	-	-
11 - 20	12	4	33.3	11	5	45.5
21 - 30	20	5	25.0	14	4	28.6
31 - 40	4	-	-			
41 - 50				1	-	-
Over 50	1	-	-	5	-	-
Unknown	16	6	37.5	13	4	30.8
Total	53	15	28.3	44	12	27.3

Table 15 L-Glutamic acid and total nitrogen contents in fish sauces

	Pure fish sauce				Mixed fish sauce				
No.	Brand	GA(g/l)	TN(g/l)	Ratio(G/N)	No.	Brand	GA(g/l)	TN(g/L)	Ratio(G/N)
1	Choors	16.0	25.6	0.625	1	Golden Triangle	11.3	16.9	0.669
2	Special	9.0	14.4	0.625	2	Triangle	8.3	3.4	2.441
3	Singhyoke	15.5	16.5	0.939	3	Huagai	13.5	22.4	0.603
4.	Vira Chonburi	4.0	11.5	0.348	4	Saam Nung	13.0	20.9	0.622
5	Vira Chonburi	41.3	18.5	2.232	5	Chunpetch	4.4	4.6	0.957
6.	Tippros Special	13.0	12.0	1.083	6	Oyster Brand	6.2	4.9	1.266
7	Tippros	14.0	23.5	0.596	7	Singhtong	10.5	6.1	1.721
8	Oeyporn	14.0	12.2	1.148	8	Sauce Veera	2.9	6.4	0.453
9	Parntong	5.6	12.5	0.448	9	Hongtong	6.7	5.3	1.264
10	Racha	9.0	14.2	0.634	10	Huagai	10.0	7.5	1.333
11	Wungkoong	20.0	13.7	1.460	11	Hanuman	7.3	4.3	1.698
12	Three Five	11.0	10.2	1.078	12	Farmer	6.8	4.0	1.690
					13	Roongroge	2.5	6.5	0.385
					14	Two Bees	2.3	1.6	1.438
					15	Golden Rain	4.3	2.1	2.048
					16	Children on tiger	8.5	7.8	1.090
					17	Plathevada	5.0	3.5	1.429
					18	Singhdang	3.5	3.5	1.000
					19	Plamortedh	8.5	13.1	0.649
					20	Children trap crab	6.8	9.6	0.708
					21	Two Golden Fish	7.0	8.5	0.824
					22	Nokegrayang	4.2	6.5	0.646
					23	Jalangrose	4.4	10.7	0.411
					24	Fish and Shrimp	3.4	4.6	0.739

Regulation in Thailand: Ratio (G/N) 0.4-0.6 for pure fish sauce; " 0.4-1.3 for mixed mixed fish sauce

GA: Glutamic acid

TN: Total nitrogen

Table 16 L-Glutamic acid contents in instant noodles

No.	Brand	L-Glutamic acid (%)	
		(Noodle)	(soup)
1.	Mama	0.037	0.46
2.	Hongte	0.013	0.38
3.	Heha	0.024	0.29
4.	Sanwa	0.035	0.42
5.	Magie	0.030	0.51
6.	Yam Yam	0.019	3.49
7.	Wai Wai	0.39	3.05
8.	Vit's noodle	0.01	2.47

Table 17 Results of Migration Test for Milk Bottles and Those Caps.

No.	Plastic		Phenol (ppm)	Formaldehyde (ppm)	Consumption of $KMnO_4$ (ppm)	Heavy metal		Volatile residue (ppm)		
	Kind	Shape				Pb(ppm)	Cd(ppm)	water	4% acetic acid	n-heptane
1	PC	milk bottle	"	"	3.95	0.004	ND	30.0	29.0	6.0
2	PP	cap of "	"	"	0.16	0.007	"	18.0	52.0	17.2
3	PC	milk bottle	"	"	0.47	0.005	"	30.0	14.0	6.0
4	PP	cap of "	"	"	0.16	0.001	"	49.0	55.0	19.0
5	PC	milk bottle	"	"	0.79	0.002	"	2.0	3.0	0.2
6	PP	cap of "	"	"	1.10	0.005	"	2.0	3.0	10.2
7	PC	milk bottle	"	"	0.63	0.001	"	5.0	2.0	0.4
8	PC	" "	"	"	1.26	0.003	"	4.0	3.0	0.8
9	PP	cap of "	"	"	1.90	0.004	"	10.0	4.0	15.4
10	PC	milk bottle	"	"	ND	ND	"	2.0	5.0	1.8
11	PP	cap of "	"	"	0.32	0.005	"	4.0	10.0	12.0
12	PC	milk bottle	"	"	0.16	ND	"	3.0	1.0	1.2
13	PP	Cap of "	"	"	ND	"	"	2.0	6.0	9.4
14	PC	milk bottle	"	"	0.95	0.003	"	1.0	2.0	0.8
15	PP	cap of "	"	"	1.42	0.004	"	1.0	1.0	6.0
16	PC	milk bottle	"	"	ND	ND	"	2.0	2.0	2.4
17	PP	cap of "	"	"	0.32	"	"	19.0	18.0	18.0
18	PC	milk bottle	"	"	1.26	"	"	26.0	24.0	4.0
19	PP	cap of "	"	"	0.79	"	"	12.0	24.0	6.0
20	PC	milk bottle	"	"	0.16	"	"	9.0	6.0	1.2
21	PP	cap of "	"	"	0.95	"	"	23.0	12.0	5.8
22	PC	milk bottle	"	"	0.95	"	"	2.0	3.0	0.6
23	PP	cap of "	"	"	0.63	"	"	6.0	15.0	5.4
24	PC	milk bottle	"	"	ND	"	"	23.0	10.0	2.0
25	PP	cap of "	"	"	1.26	"	"	6.0	13.0	9.0
26	PC	milk bottle	"	"	0.63	"	"	20.0	30.0	6.0
27	PP	cap of "	"	"	0.63	"	"	30.0	33.0	12.8
Japanese regulation			ND	ND	10.0	less than 1ppm as Pb		30.0	30.0	30.0

PC: Polycarbonate PP: Polypropylene

Table 18 Results of Migration and Material Test for Vegetable Oil Bottles and Those Caps

No.	Plastic		Migration Test						Material Test	
			Consumption of $KMnO_4$ (ppm)	Heavy metal		Volatile residue(ppm)			Dibutyl tin compound	Cresol phosphate ester
	Kind	Shape		Pb(ppm)	Cd(ppm)	water	4% Acetic acid	n-Heptane		
1	PVC	bottle	0.32	ND	ND	14.0	25.0	5.6	ND	ND
2	PP	cap of bottle	0.95	"	"	43.0	58.0	103.0	-	-
3	PVC	bottle	0.32	"	0.001	30.0	36.0	6.4	ND	ND
4	PP	cap of "	0.63	"	0.002	84.0	68.0	281.0	-	-
5	PVC	bottle	0.95	0.002	0.002	36.0	41.0	8.8	ND	ND
6	PP	cap of "	2.53	ND	ND	76.0	82.0	984.0	-	-
7	PVC	bottle	2.84	"	0.001	20.0	33.0	12.0	ND	ND
8	PP	cap of "	9.48	0.02	0.01	46.0	68.0	394.0	-	-
9	PVC	bottle	5.68	0.002	0.002	11.0	21.0	10.2	ND	ND
10	PVC	"	0.95	ND	0.002	62.0	63.0	13.8	"	"
11	PVC	"	2.21	"	ND	12.0	24.0	6.0	"	"
12	PVC	"	0.32	0.003	0.002	31.0	45.0	12.4	"	"
13	PP	cap of "	0.95	0.003	0.003	52.0	34.0	379.0	-	-
14	PVC	bottle	0.63	0.002	0.002	55.0	55.0	11.0	ND	ND
15	PP	cap	0.95	0.004	0.002	52.0	105.0	447.0	-	-
Japanese regulation			10.0	less than 1ppm as Pb		30.0	30.0	30.0	ND	ND

PVC: polyvinylchloride PP: polypropylene

PROJECT : PROMOTION OF PROVINCIAL HEALTH SERVICES
REPORT OF THE SEVENTH COORDINATING COMMITTEE MEETING
at the Department of Medical Sciences, Bangkok, Thailand
on April 28, 1981 at 10:00 a.m.

Name of Attendants :-

1. Dr. Manasvi Unhanand	Director-General, Department of Medical Sciences, Chairman
2. Dr. Sutas Guptarak	Deputy Director-General, Project Director
3. Dr. Thongyoi Swasdichai	Provincial Chief Medical Officer, Chanthaburi Field Project Manager
4. Dr. Panchitta Ekachampaka	Director, Division of Clinical Pathology
5. Mrs. Chaweewon Halilamian	Director, Division of Food Analysis
6. Dr. Kanai Chatiyanonda	Director, Virus Research Institute
7. Dr. Pramukh Chandavimol	Provincial Chief Medical Officer, Chonburi Province
8. Dr. Sujarti Jatanasen	Director, Division of Epidemiology, Office of the Under-Secretary of State, Ministry of Public Health
9. Dr. Chaichana Suwanawejh	Rural Health Division, Office of the Under-Secretary of State, Ministry of Public Health
10. Mr. Poonsup Piya-Anant	Chief, Public Health Branch, Bureau of the Budget
11. Mrs. Sonthaya Lueprapai	Budget Analyst, Bureau of the Budget
12. Mr. Surayuth Kungsadan	Department of Technical and Economic Cooperation
13. Mr. Tadaharu Goto	Second Secretary, Embassy of Japan
14. Mr. Takanori Jibiki	JICA, Bangkok office
15. Dr. Megumi Hasegawa	Japanese Expert Team Leader
16. Dr. Soichi Kumaoka	Japanese Expert, Ex-Team Leader
17. Mr. Masaaki Tsuno	Japanese Expert in Bacteriology
18. Mr. Masao Watanabe	Coordinator
19. Dr. Mongkol Mokkhasmit	Director, Division of Provincial Health Laboratory Services, Assistant Project-Director, Secretary
20. Dr. Boonluan Phanthumachinda	Director, Division of Medical Entomology, Assistant Secretary

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I. Information by Chairman

The Chairman informed the committee as follows :-

1.1 Mission

a. Dr. K. Nakazawa visited the project during 30 September to 8 October for the observation and discussion of the project implementation.

b. Project Evaluation Team arrived to Thailand for the purpose of evaluation on the achievement of the project during 12 November 1980 to 3 December 1980.

The members of the team are as follows :-

Professor Konosuke Fukai	Research Institute for Microbial Diseases, Osaka University, Team Leader
Dr. Ichiro Momoi	Director, Social Welfare Organization "Sanseikai" Imperial Gift Foundation INC., Japan
Dr. Shojiro Asahina	Guest Scientists, Ex-Director of Department of Medical Entomology, National Institute of Health, Tokyo
Dr. Saburo Nishi	Chief of Public Health Administration, Institute of Public Health, Japan
Dr. Hiroyuki Toyokawa	Associate Professor, Faculty of Medicine, University of Tokyo
Mr. Osamu Ohkura	Staff, Second Medical Cooperation Division, Medical Cooperation Department, JICA

c. The Water Supply Facilities Basic Design Team was sent to the project for the purpose of feasibility study for rural water supply improvement during 30 November 1980 to 27 December 1980.

The members of the team are as follows :-

Professor Konosuke Fukai	Research Institute for Microbial Diseases, Osaka University, Team Leader
Mr. Joji Yanagawa	Chief, Water Supply Division, Water Supply Design and Environmental Sanitation Department, Ministry of Health and Welfare, Japan

Mr. Kazuyoshi Ito	Chief Engineer, Pacific Consultants International Ltd., Japan
Mr. Noburo Sugiura	Pacific Consultants International Ltd., Japan
Mr. Yoshimi Kishikawa	- do -
Mr. Eiji Terasawa	Staff, Medical Cooperation Department, JICA

1.2 Appointment of Field Project Manager

As Dr. Chaisit Dharakul, Director of Prapokklao Hospital, has asked for resignation from this position and it is considered to appoint Dr. Thongyoi Swasdichai Provincial Chief Medical Officer, Chanthaburi, to be a new Field Project Manager which has been approved by the Under-Secretary of State for Public Health.

1.3 Appointment of Activity IV (Training) Manager

As Dr. Chaisit Dharakul, Director of Prapokklao Hospital, has also asked to resign from this position and it is considered to appoint Dr. Khunthong Sukatipanta, Director, Office of Technical and Public Health Services Promotion, Chanthaburi, to be a new Activity IV Manager which has been approved by the Under-Secretary of State for Public Health.

1.4 Expert

Dr. Akio Mori, short term expert in Medical Entomology, finished his three months work in the prcject and returned to Japan on 28 November 1980.

Dr. Kenji Ohta, Expert in Bacteriology, has finished his one year term in Thailand and returned to Japan on 31 March 1981 and Mr. Masaaki Tsuno, his successor has arrived on 15 April 1981 for his one year term of working.

Mr. Hiroshi Sakai, expert in Laboratory Technology, left on 22 April 1981 as the term is ended.

1.5 Fellowship

Dr. Damrong Bhanthumkosol, Activity I Manager and Chief of Pathology Department, Prapokklao Hospital and Dr. Prayura Kunasol, Epidemiology Division have gone to Japan for the training programme in Clinical Pathology and Epidemiology respectively on 22 March 1981 for the duration of 21 days.

II Report the extension of the project

On 27 October 1980, the project evaluation meeting was held at Travel Lodge Hotel, Chanthaburi. The evaluation has been performed by the evaluation committee members which consisted of Thai, Japanese and the Third party members. The result of the meeting can be concluded as follows :-

1. Project's objectives will be revised to more specific.

2. Plan of Action should be set in advance before March each year for the reason of budget allowance by Thai side.

3. To find the ways for some connection of primary health care to the project's activity.

4. Try to find the ways for making use of health communicator (Volunteer - communicator) for nation wide programme.

5. Laboratory spaces for Activity I is necessary for future development.

6. Minicomputer should be set up for research data collection and for research information system.

7. Diagnosis of viral diarrhea should be studied.

8. Cooperation with external resources such as Thai national universities in term of expert, consultant or even the university students should be considered when necessary.

9. Supplying of some particular equipment such as incinerator is required.

As the result of the evaluation, the duration of project's cooperation has been extended for another 3 more years, the new Record of Discussion was signed by the Under-Secretary of State for Public Health, the Head of the Japanese Implementation Survey team and the Director-General of the Department of Technical and Economic Cooperation at the Ministry of Public Health on December 1, 1980.

III Miscellaneous

1. As Dr. Soichi Kumaoka, the Japanese Team Leader, after four years in this position, has ended his term of working in Thailand on 31 April 1981 and the Japanese Government has appointed Dr. Megumi Hasegawa as his successor for the rest of the project duration.

The Chairmen, on behalf of the Thai Authorities, expressed the thankfulness to Dr. Soichi Kumaoka for his useful and devoted work during this stay in Thailand.

2. The Input for the Project in 1981 Japanese Fiscal Year

Dr. Megumi Hasegawa, the new Japanese Team Leader has reported the input for the project in the year 1981 JFY as follows :-

a) Equipment provision programme

Total Budget ¥ 20,000,000 (CIF)

about 15% will be necessary for transportation fee and Insurance fee.

Revised equipment list is attached.

b) Number of participants (counterpart) accepted.

Three persons.

c) Number of assignment of Expert

Mr. M. Tsuno (Bacteriology)

April 15, 1981 One year

Dr. H. Itoh (Virology)

May 19, 1981 Two years

Dr. K. Buei (Medical Entomology)

May 19, 1981 Two years

Dr. E. Marui (Public Health)

May 19, 1981 Six months

Dr. Y. Tonogai (Food Analysis)

After August 1981 One year

* Expert on Clinical Chemistry, and Food sciences are now under consideration

* Expert on Public Health Nurse is not available due to the difficulty of recruitment.

The Chairmen requested for consideration by the Japanese side for increasing of at least two more fellowships, Dr. M. Hasegawa imformed the meeting that he will try to discuss the matter with the JICA Head Office.

3. Implementation of Improvement of Water Supply Facilities.

As the Japanese Government has prepared to undertake the Implementation of Water Supply Facilities in Chanthaburi province, therefore, the formal request from the Thai Authorities is required. The Chairman informed the meeting the recommendations of the Japanese Survey Team which would be summarized as follows :-

3.1 It is recommended that an executive committee be set up prior to puting this project into action in order to facilitate early and efficient implementation and that the executive committee be developed into an organization which will maintain and manage the water supply system.

3.2 It is desirable to have the community people participate in the proposed water works project in many ways from the early stage of the project. For instance, their participation in such phases of the project as facility siting, land acquisition and construction work will promote early and efficient materialization of the project. It is desirable that the community people who offer land or labor to help realize the project be compensated reasonable.

3.3 It will be necessary to keep on hand spare parts and repair tools in readiness in each model district to remedy problems which may arise after completion and it is also desirable that service personnel be organized for the maintenance of the water supply system at the changwad level or at the Amphur level to meet the growing needs of the community in each model area.

3.4 In the proposed water works project no treatment facility will in principle be provided. However, it is anticipated that the water supply system will tap the rainwater reservoirs depending the location, and hence, susceptibility to contagious diseases is a possibility in the model areas. It is therefore desirable the proper disinfectants be kept close at hand and under the guidance of the water supply system maintenance and management organization.

3.5 The proposed water treatment is, in a word, an emergency measure which will be taken to cope with the prevalence of communicable water-borne diseases. It is hoped that systematic water treatment will be planned in the near future in order to bring a water supply system, in its proper sense of the term, into the reach of all the members of the community.
