BRIEF INTRODUCTION OF

JOINT COOPERATION PROJECT

ON

THE SCALE OF THE PILOT PLANT

IN

THAILAND, INDONESIA, MALAYSIA AND PHILIPPINES

Bangkok, Thailand

November, 1998

New Energy and Industrial Technology
Development Organization (NEDO)
Water Re-Use Promotion Center, Japan

CONTENTS

1. The Project Name

(A) "The Project for Joint Cooperation on the Research and Development of a Simple Purification System for Industrial Wastewater " (THAILAND, INDONESIA and MALAYSIA)

(B) " Research Cooperation Project on an Environment-Compatible Type, Waste-Resource Effective-Utilization System " (PHILIPPINES)

2. The Objectives of the Project

For (A) Project

The project will conduct research activities and develop systems with the following features to suit the regional conditions of each country:

(1) Simple systems for properly treating organic substances in industrial waste water and reducing water contaminants.
(2) Systems for significantly reducing the generation of sludge, which releases methane gas and causes environmental pollution.
(3) Systems having significantly reduced construction and operating cost compared with conventional processes.
(4) Systems which are easy to operate and maintain.

These improved systems will effectively prevent both water pollution and the generation of greenhouse gases, thus contributing to the protection of the environment on a worldwide scale.

For (B) Project

The Project will conduct the research activities and develop systems, by the cooperation between Japan and the Philippines, a wastewater treatment and water reclamation and reuse system easy to operate and maintain and low in price, which is applicable in the Philippines, and thereby contribute to solving the problems relating to the water resources, such as conservation of water, prevention of water pollution, etc. in the Philippines.

(1) Systems for water reclamation and reuse system

The items (1), (3) and (4) on the above mentioned in (A) Project would be also applied .

3. The Scope of the Project.(For the both Project)

The project shall carry out the following activities:

3.1 Survey of the present industrial wastewater situation

a. Related documents will be collected and analyzed.
b. By utilizing existing documents, sending out questionnaires and visiting
factories to analyze BOD,COD, SS and some other components, the present situation of industrial wastewater and wastewater treatment facilities will be studied and analyzed.
c. After the above analysis is completed, the following will be conducted:

1) Selection of the kinds of wastewater to be studied.
2) Decision concerning the subjects for joint basic research activities and the equipment necessary for the experiments.
3) Selection of several sites for the pilot plant
The first pilot plant shall be located near laboratory of counterpart. (within one hour's drive from the laboratory)
The reason is so that the researcher of counterpart and Japanese supervisors can easily commute every day.
4) Selection of a company to manufacture the pilot plant.
The basic and detailed design work will be conducted in Japan. However, the manufacture of the pilot plant shall be entrusted to local companies in order to minimize procurement and use local materials.

3.2 Joint basic research activities

These basic activities will be mainly conducted by the counterpart of each country and the WRPC of Japan. Some subjects can be conducted in cooperation with counterparts of three countries according to the countries of the subjects.

3.3 Pilot Plant

The basic designing is planned to start in the first year and be finished in year, excepting Philippines Project which will start in the second fiscal year.
The detailed designing will be planned to finish in one year after the designing.
The manufacturing of the main unit process, an anaerobic bio-

reactor, will be finished in one year after the detailed designing and the operation will start the next month.

The main objective of this pilot plant is to establish the optimum operating conditions suited to the actual conditions of wastewater by the anaerobic process.
The detailed test items are as follows:

(1) to test operating temperature, retention time of reactor, pH, micro-organism concentration, etc in the anaerobic treatment process.
(2) to test conditions of combining an anaerobic reactor with other kinds of process.
(3) to determine the systems and operating conditions necessary for designing to accomplish minimum sludge generation.

3.4 Dispatching supervisors from Japan (For the both Project)

The supervisors will be dispatched from Japan for each country for basic research activities and for pilot plant's preparation & operation. Short term and long term supervisors will be dispatched according to the activities they will supervise.

3.5 Accepting counterpart's researchers and/or engineers for training in Japan

In this project, 3 researchers and/or engineers of counter part will be invited for one month every year for each country.
They will have lectures and discussions with Japanese experts, visit factories to study various kinds of wastewater treatment processes and receive technical materials which will be necessary for their future activities.

3.6 The conference among four countries

From 1995,MITI and NEDO are holding joint conferences in order to facilitate to exchange information, to avoid the repetition of similar experiments and to make the decisions concerning the next fiscal year.

- The first joint meeting was held in Bangkok in January, 1995.
- The second joint meeting was held in Jakarta in March, 1996.
- The third joint meeting was held in Kuala Lumpur in January, 1997
- The fourth joint meeting was held in Tokyo in October, 1998

3.7 Annual report

An annual report will be prepared at the end of every fiscal year.

3.8 Final evaluation

A final evaluation will be conducted at the last year of the project schedule fore each country.

4. The Organization for Implementation

The project is implemented with participate of the following organizations from Japan, Thailand, Indonesia, Malaysia and Philippines.

Japan

- New Energy and Industrial Technology Development Organization
- Water Re-Use Promotion Center (WRPC)

Thailand :

- Thailand Institute of Scientific and Technological Research (TISTR)
- Ministry of Science, Technology and Environment
- Ministry of Industry

Indonesia :

- Institute for Research and Development of Chemical Industry
- Ministry of Industry and Trade

Malaysia :

- SIRIM Berhad
- Department of Environment
- Ministry of Science, Technology and Environment

Philippines :

- Industrial Technology Development Institute
- Department of Science and Technology

Project Schedule in Thailand

Fiscal Year	1992-1993	1994	1995	1996	1997	1998
1. Field Survey in Thailand	———	———	———	———.....		
2. Basic Research Activity in Japan and Thailand	———	———	———	———.....		
3. Pilot Plant 3.1 Designing Basic	—					
Detailed	—					
3.2 Manufacturing & Installation of Anaerobic Reactor		—				
3.3 Operation		—	—	—		
4. Dispatching Experts from Japan	—	—	—	—		
5. Receiving Researchers from Thailand	—	—	—	—		
6. 4-Countries Conference	☆	☆	☆	☆		
7. Annual Report	☆	☆	☆	☆		
8. Final Evaluation				☆		
9. Follow-up Project					—	—...

Note: Japanese fiscal year runs from April to March of next year.

Project Schedule in Indonesia

Fiscal Year	1993-1994	1995	1996	1997	1998	1999
1. Field Survey in Indonesia	—	—	—	—		
2. Activity in Japan and Indonesia	—	—	—	—		
3. Pilot Plant						
3.1 Designing						
Basic	—					
Detailed	—					
3.2 Manufacturing & Installation of Anaerobic Reactor		—				
3.3 Operation		—	—	—		
4.Dispatching Expert from Japan	—	—	—	—		
5.Receiving Researchers from Thailand	—	—	—	—		
6. 4-Countries Conference	☆	☆	☆	☆		
7. Annual Report	☆	☆	☆	☆		
8. Final Evaluation				☆		
9.Follow-up Project					—	.....

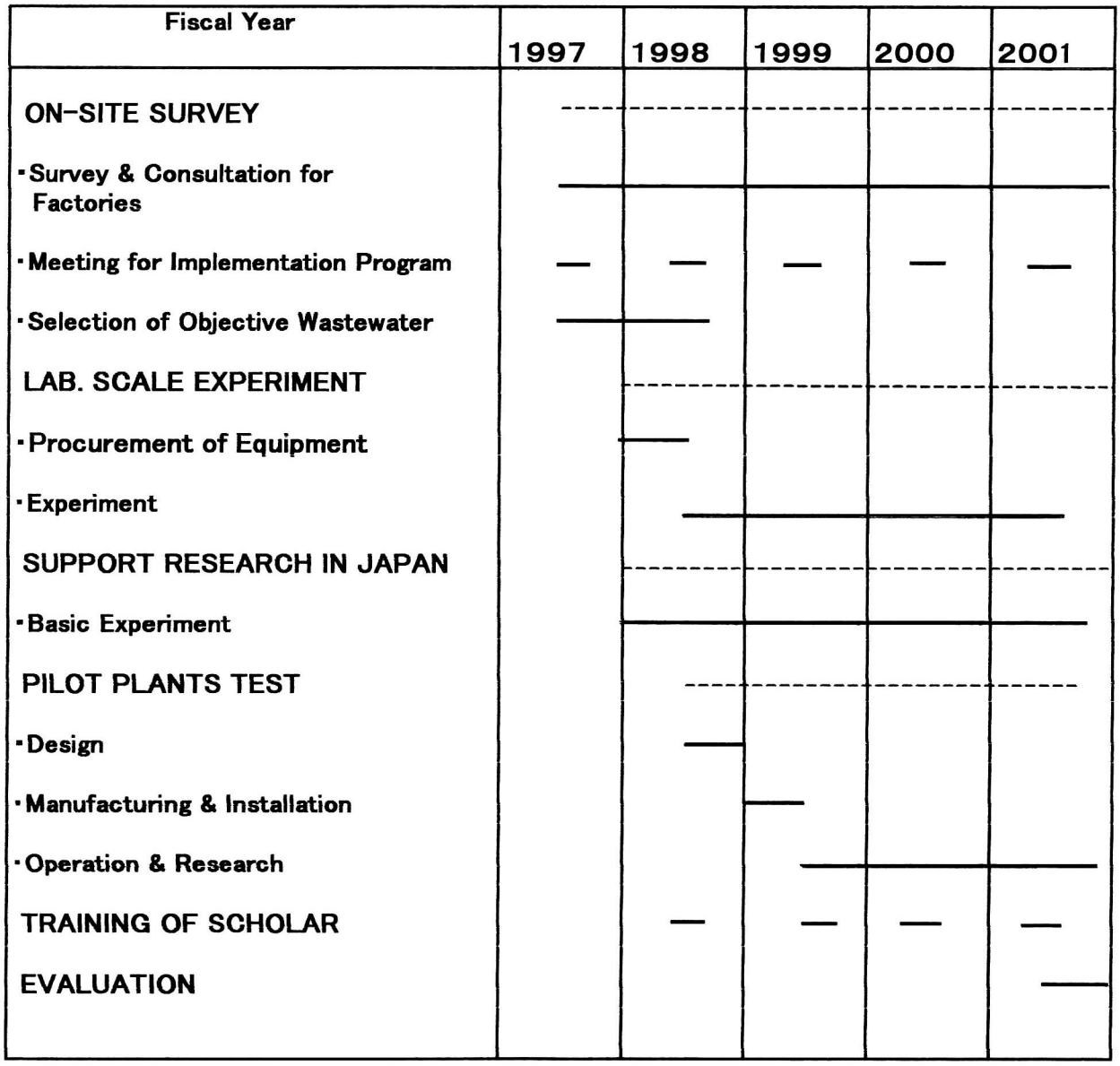
Note: Japanese fiscal year runs from April to March of next year.

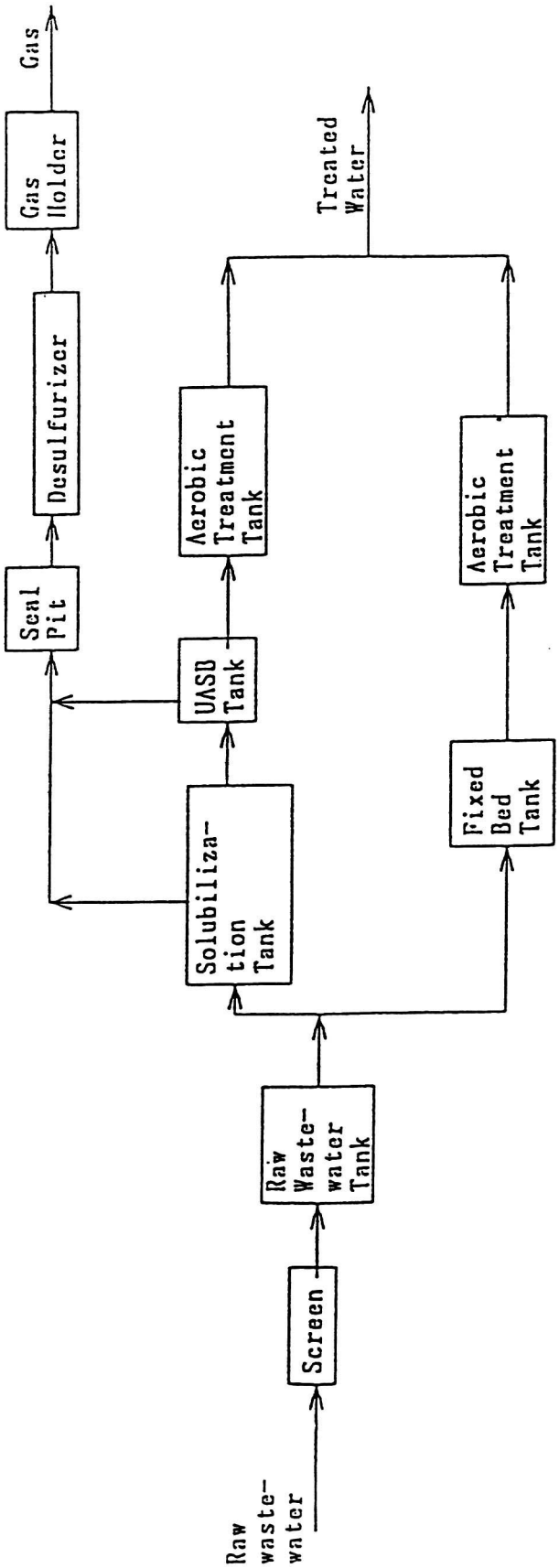
Project Schedule in Malaysia

Fiscal Year	1994-1995	1996	1997	1998	1999	2000
1. Field Survey in Malaysia	———	———	———	———.....		
2. Basic Research Activity in Japan and Malaysia	———	———	———	———.....		
3. Pilot Plant 3.1 Designing Basic	—					
Detailed	—					
3.2 Manufacturing & Installation of Anaerobic Reactor		———	———			
3.3 Operation			———	———		
4. Dispatching Experts from Japan	———	———	———	———		
5. Receiving Researchers from Thailand	—	—	—	—		
6. 4-Countries Conference	☆	☆	☆	☆		
7. Annual Report	☆	☆	☆	☆		
8. Final Evaluation				☆		
9. Follow-up Project					.....	.....

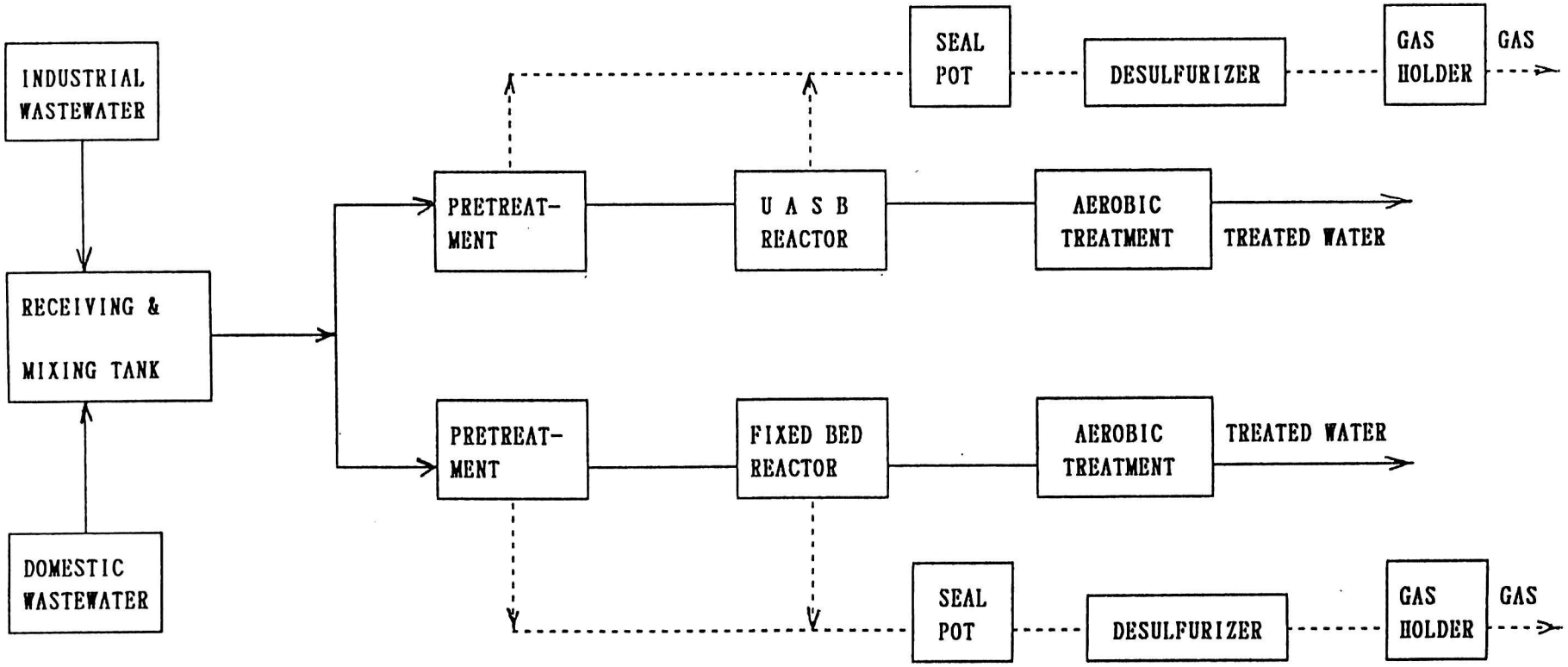
Note: Japanese fiscal year runs from April to March of next year.

Project Schedule in Philippines

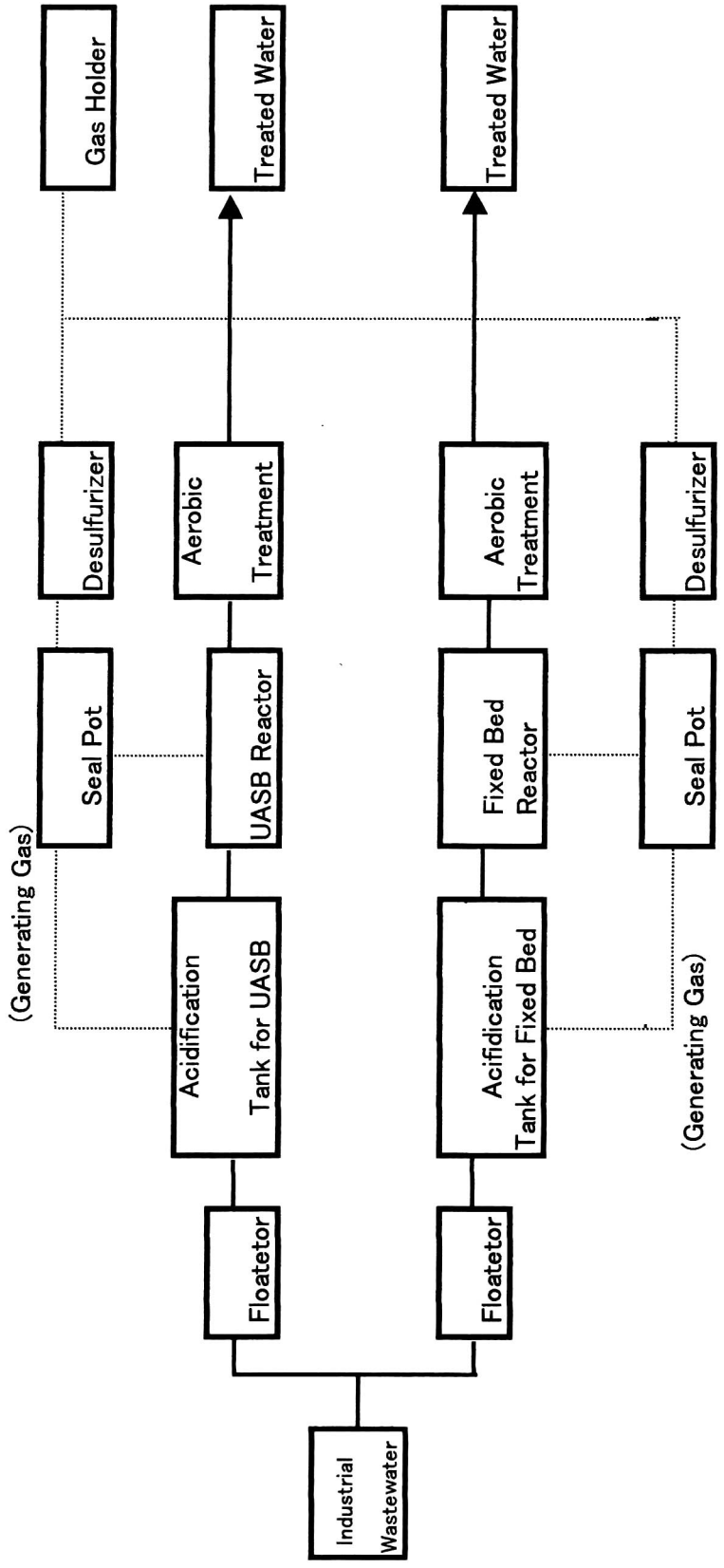




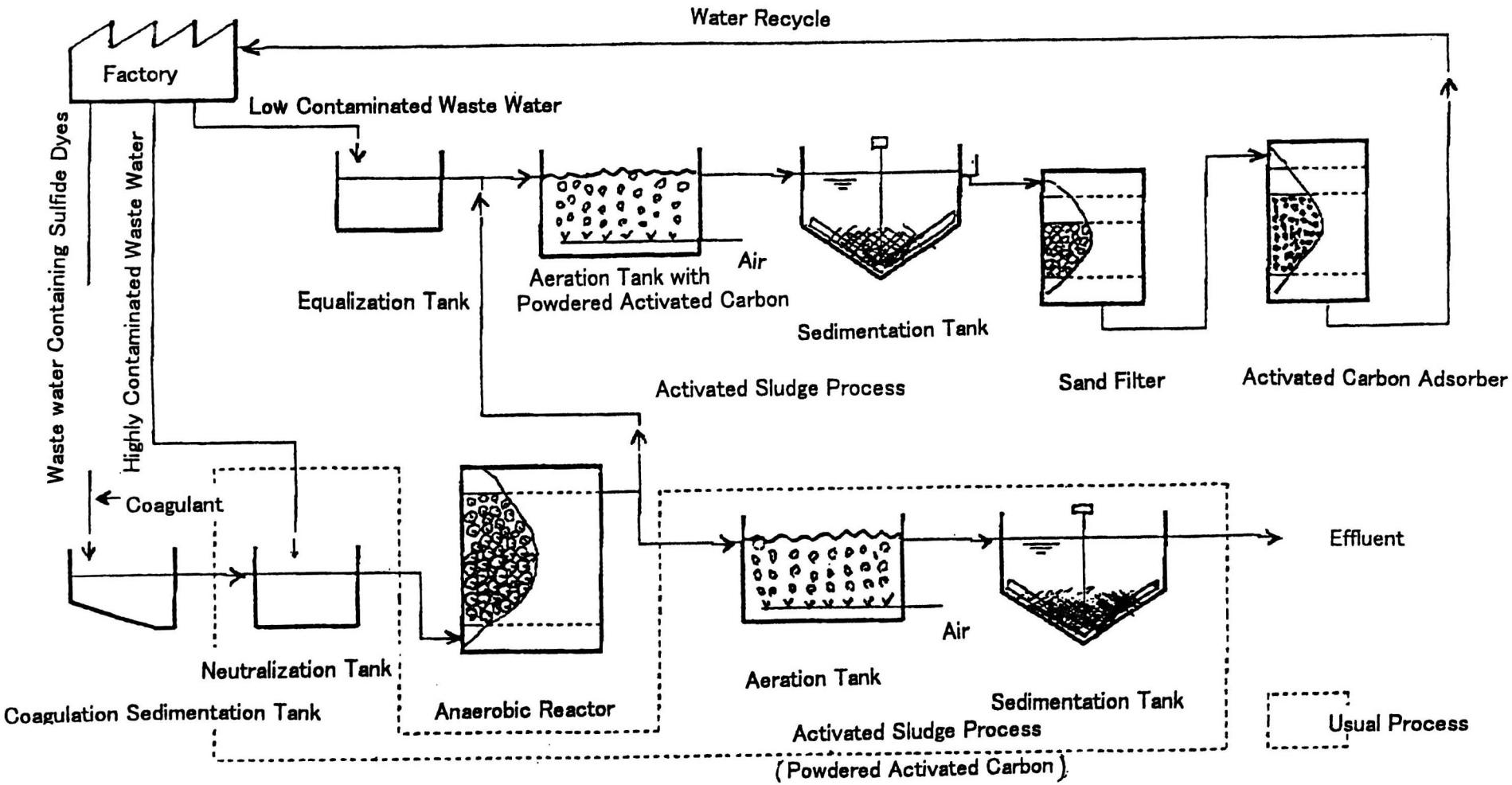
Flow Sheet of Pilot Plant for Thailand



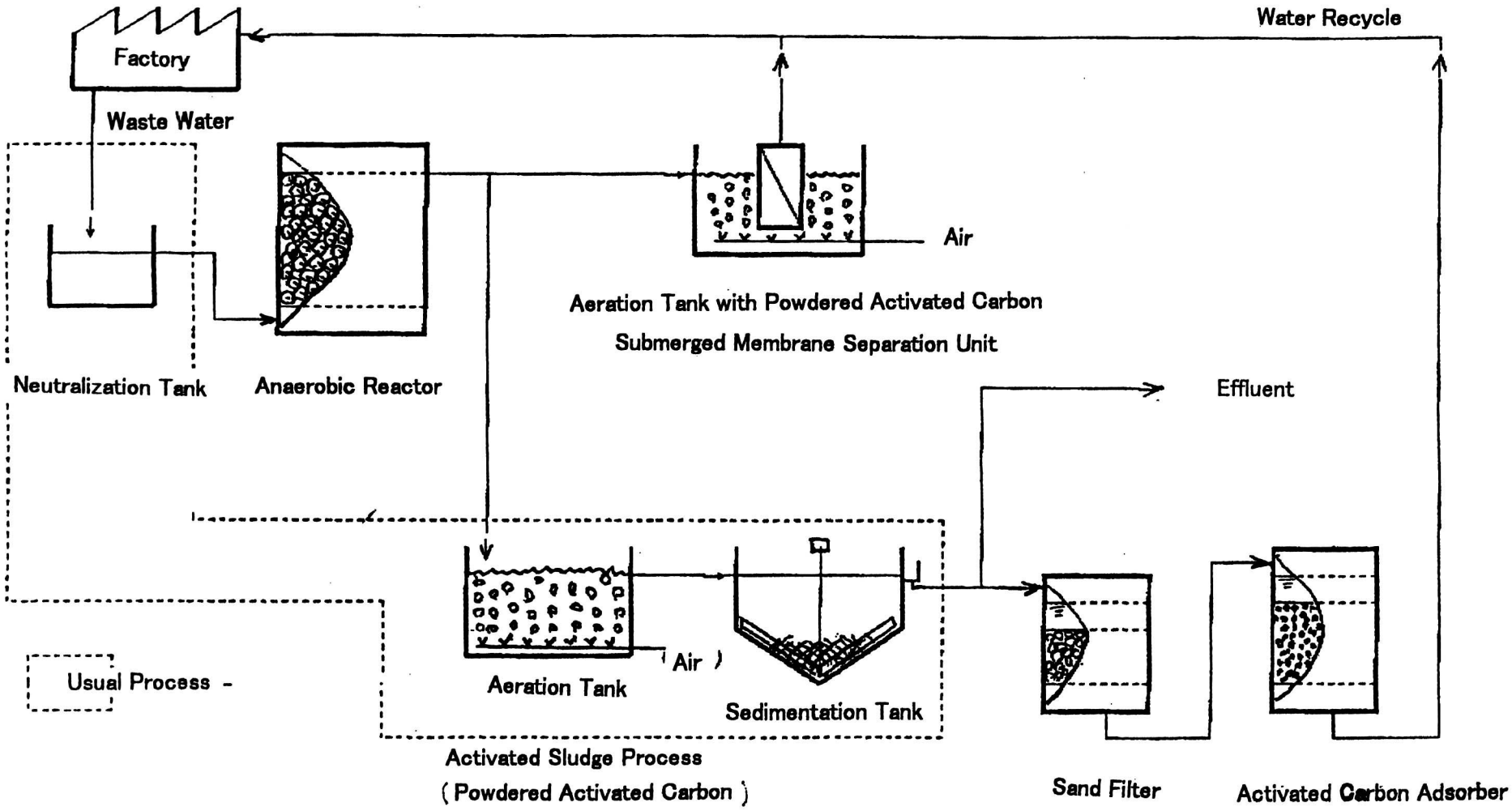
FLOW SHEET OF PILOT PLANT FOR INDONESIA



Flow Seet of Pilot Plant for Malaysia



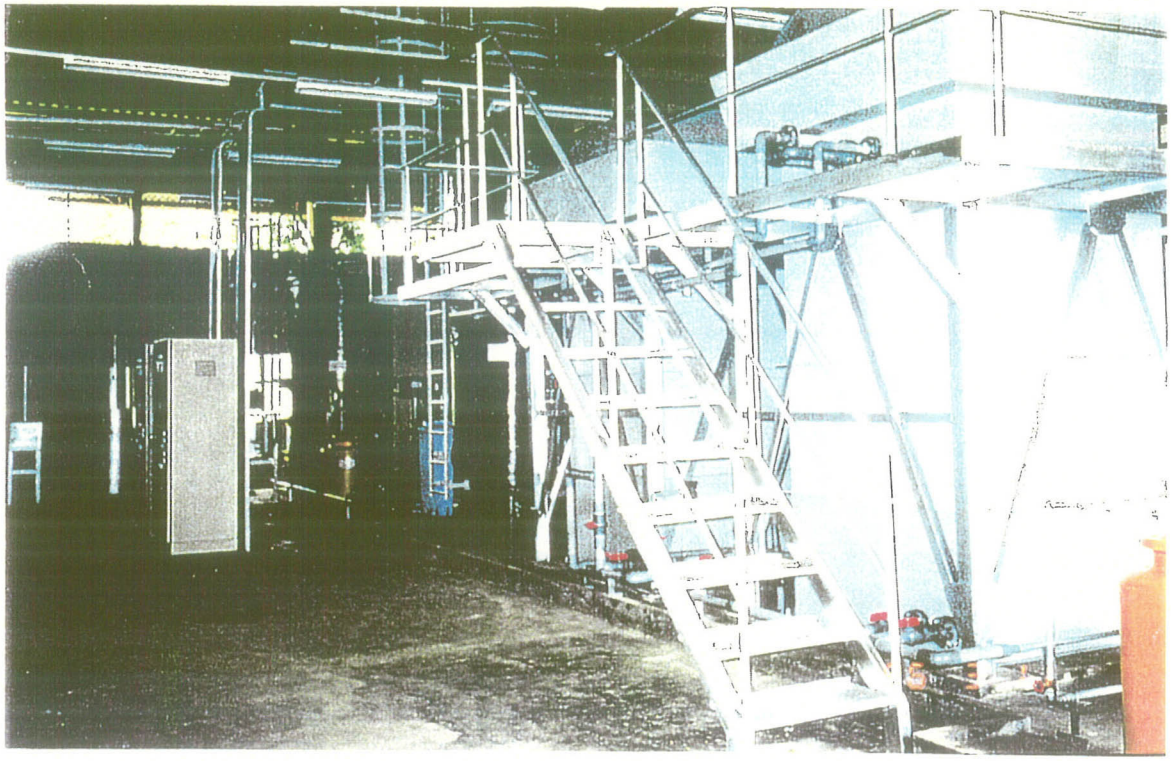
Supposed Flow Sheet of Pilot Plant for Textile Dyeing in Philippines



Supposed Flow Sheet of Pilot Plant for Food Processing in Philippines

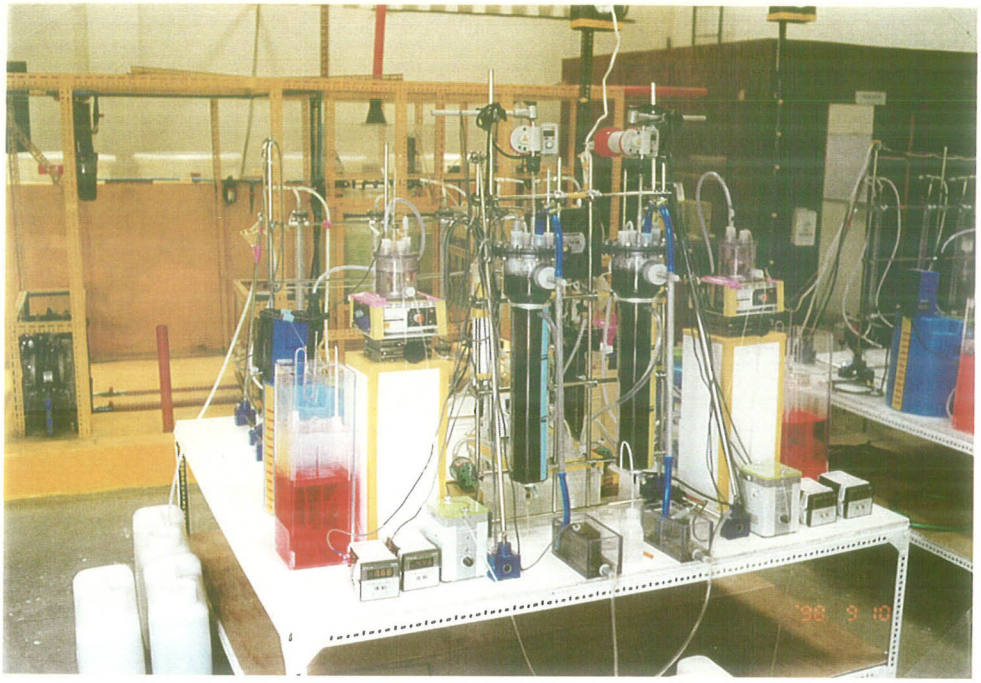
Photograph of Pilot Plant IN Thailand

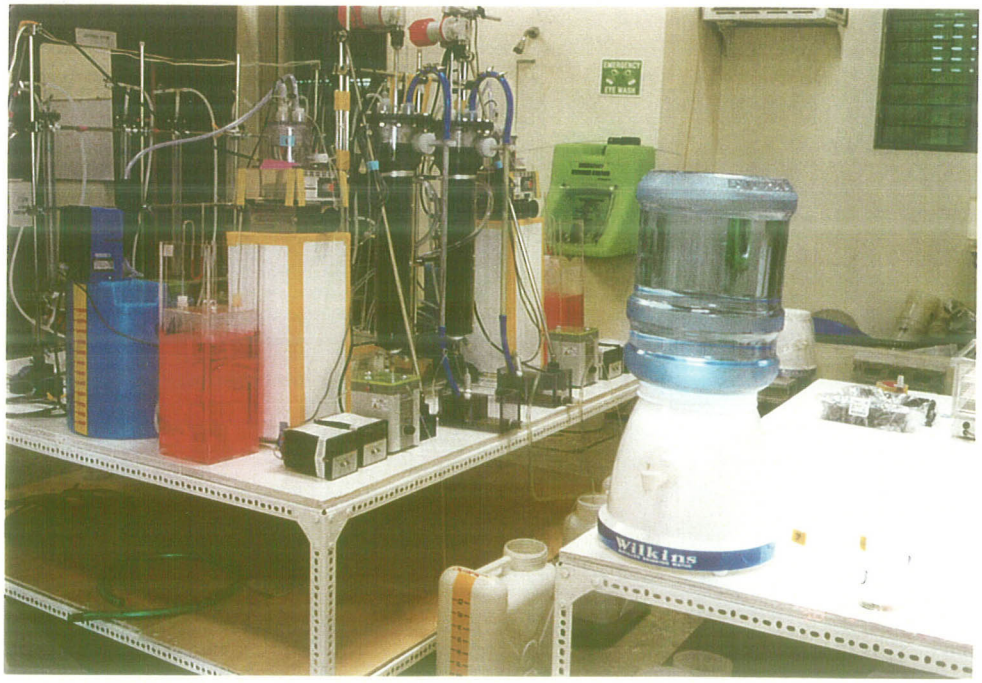
Opening Ceremony of Pilot Plant located at Cho-Heng Rice Vermicelli in Thailand(January 24,1995)



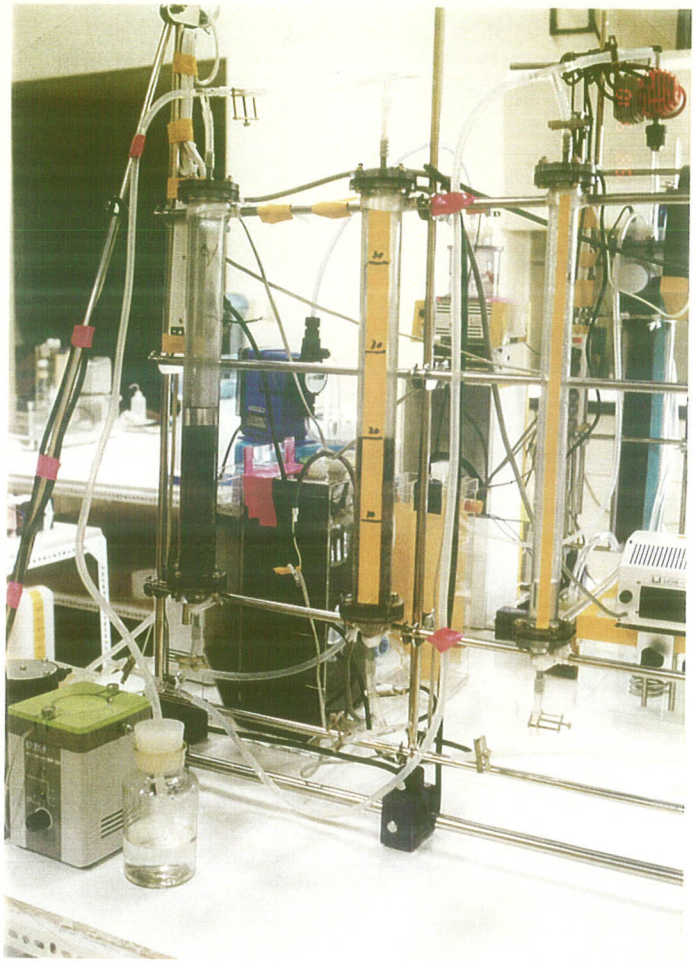
Photograph of Pilot Plant
in Indonesia

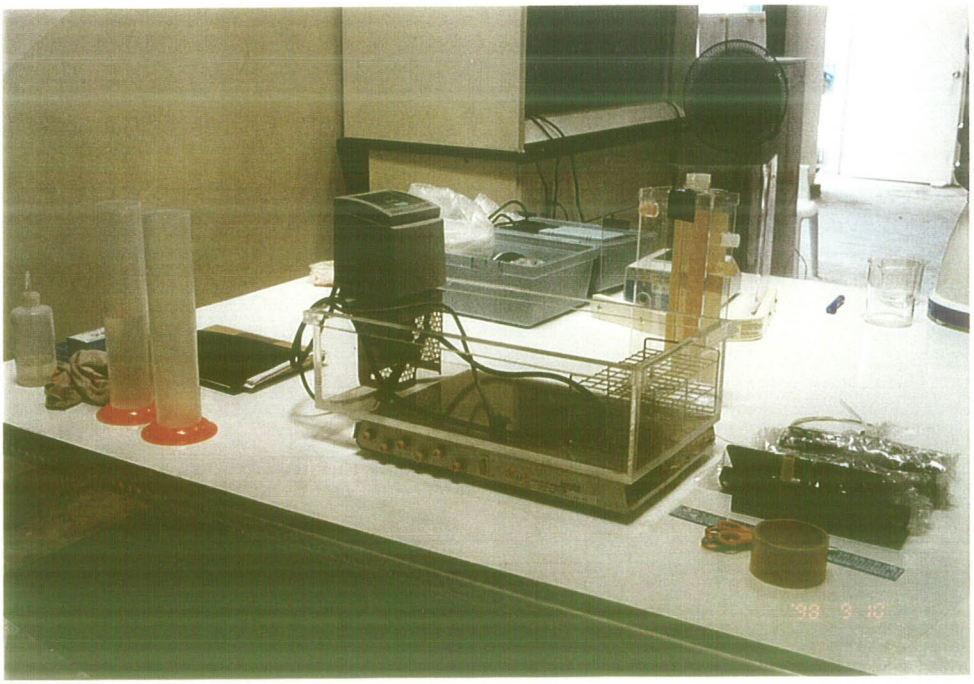
Opening Ceremony of Pilot Plant located at BBIK in Indonesia(5 March 1997)



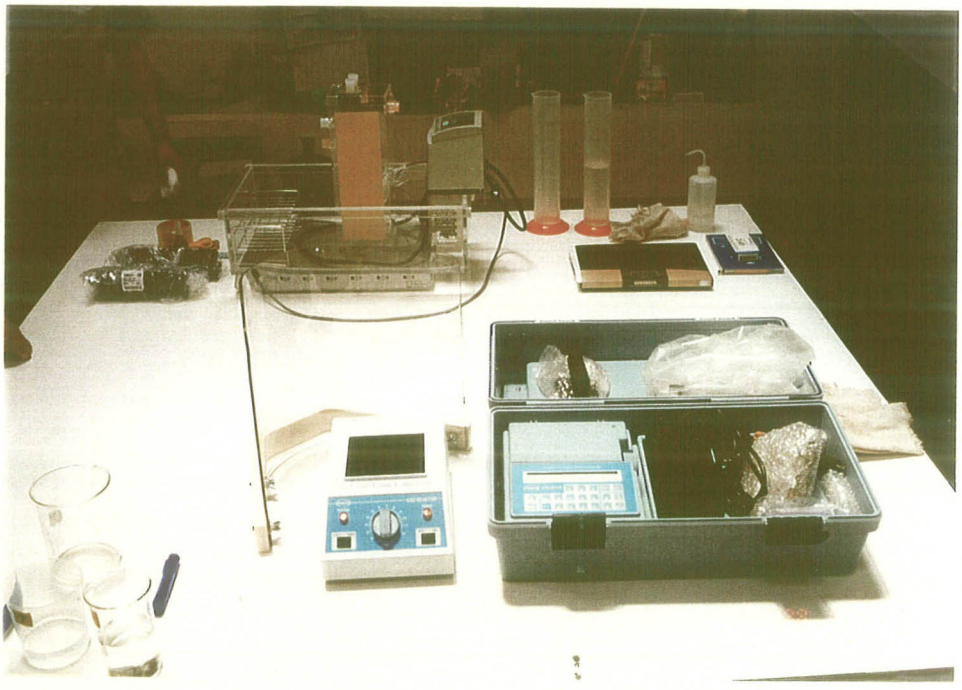


Laboratory Equipment for Philippines





Laboratory Equipment for Philippines



Laboratory Equipment for Philippines