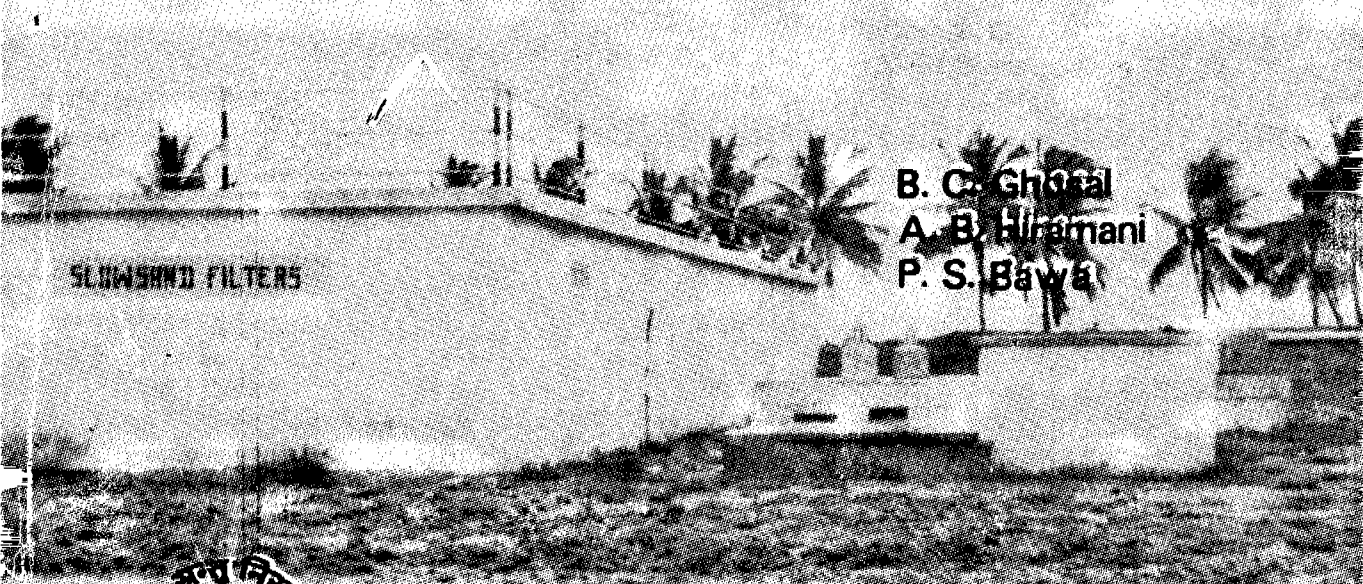
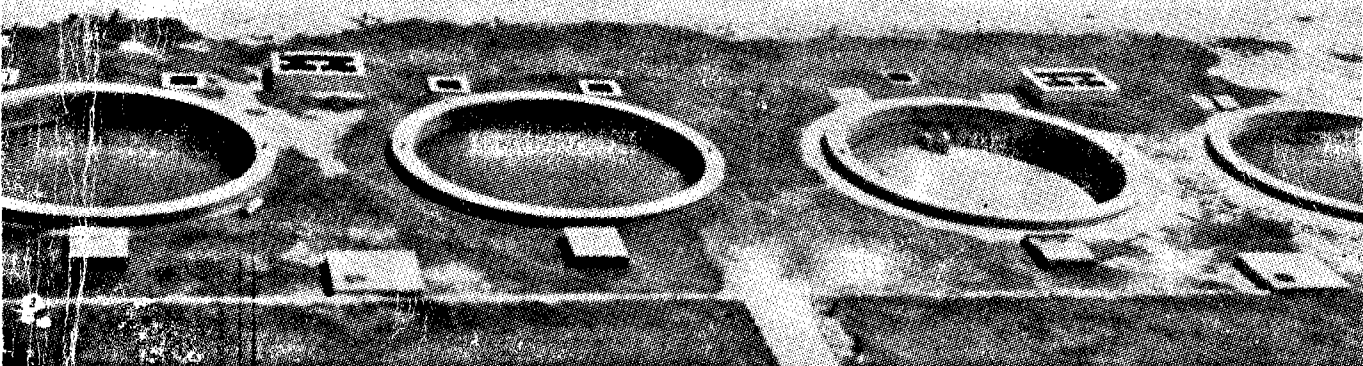


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Health Education and Community Participation in Slow Sand Filtration Programme in India



B. C. Ghosal
A. B. Hiramani
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CENTRAL HEALTH EDUCATION BUREAU
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HEALTH EDUCATION AND COMMUNITY PARTICIPATION IN SLOW SAND FILTRATION PROGRAMME

— An Action Research Study

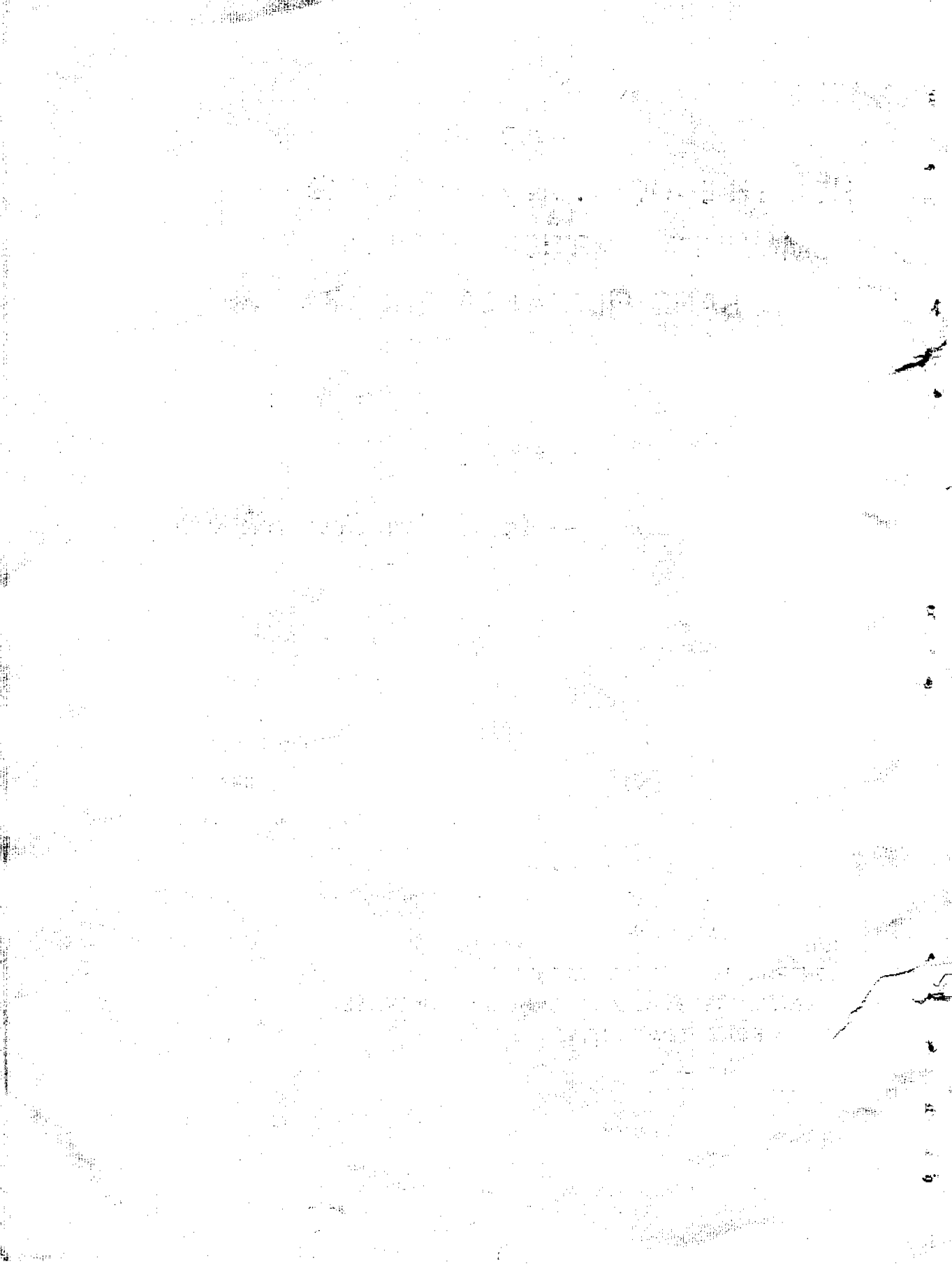
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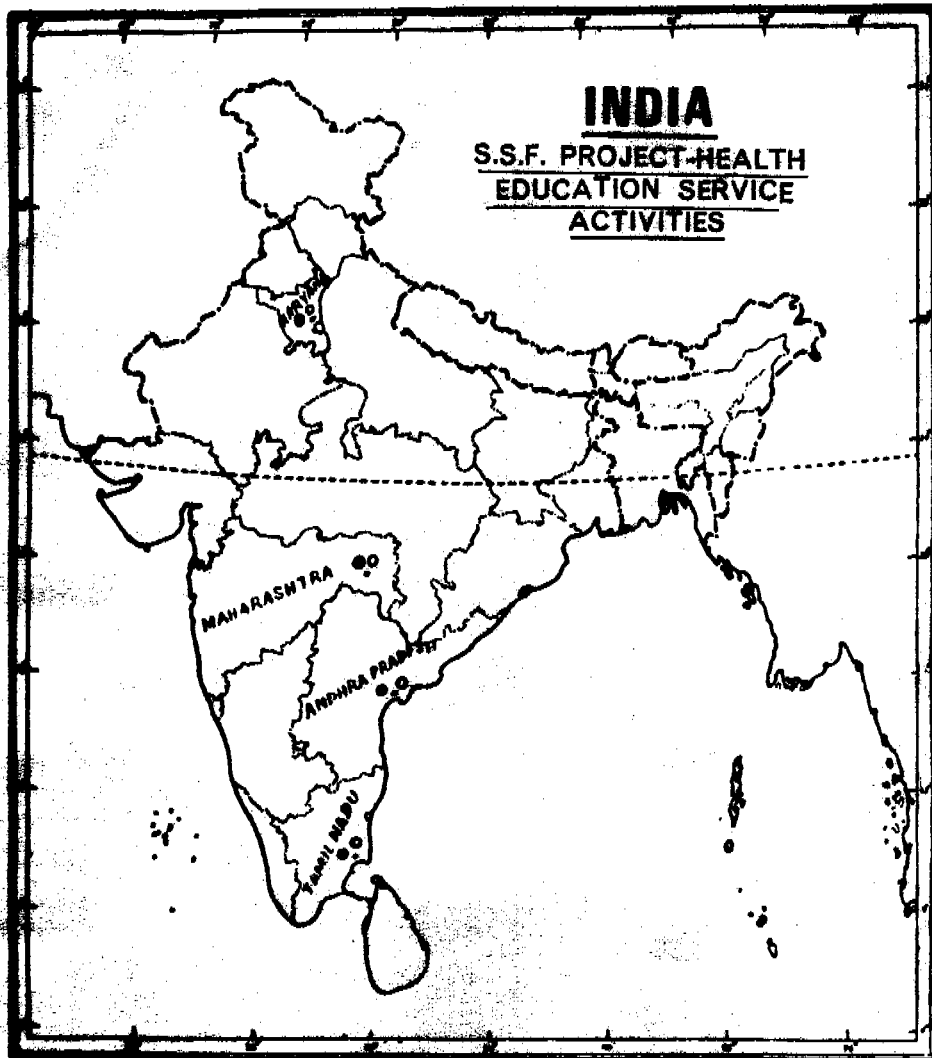
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Based upon Survey of India outline map printed in 1979.

The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.

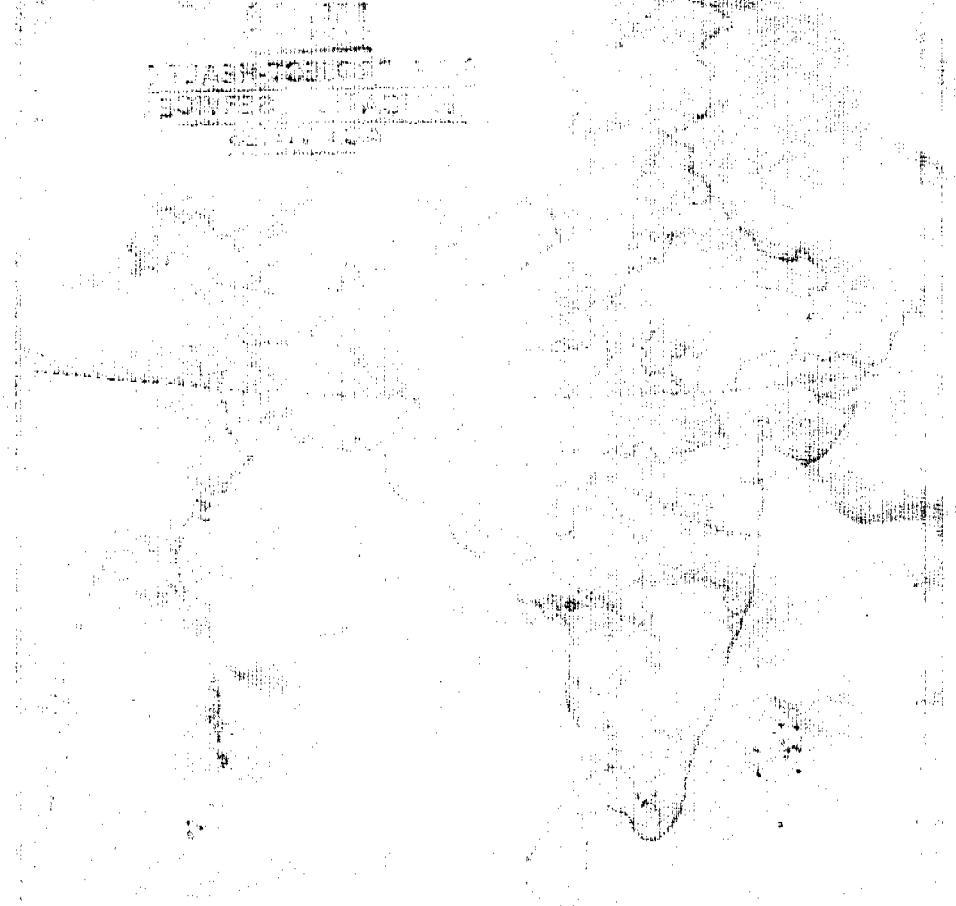
The boundary of Meghalaya shown on this map is as interpreted from the North-Eastern Areas (Reorganisation) Act, 1971, but has yet to be verified.

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S. S. F. PROJECT SITES
(LEGEND)

STATE	DISTRICT	BLOCK	VILLAGE
ANDHRA PRADEH	WEST GODAVARI	DENDULURU	POTHUNURU
HARYANA	SIRSA	DUBWALI	ABUB-SHAHAR
MAHARASHTRA	NAGPUR	KALMESHWAR	BURJUWADA
TAMIL NADU	MADURAI	CUMBUM	KAMMAYYA KOUNDEN PATTI

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P R E F A C E

The World Health Organization : International Reference Centre (WHO : IRC), for Community Water Supply, the Hague, the Netherlands, initiated Research-cum-Demonstration Programme for Slow Sand Filtration (SSF) in eight developing countries including India in 1976. The primary goal of the SSF Project is to promote Slow Sand Filtration of Community Water Supply in developing countries. The Project has mainly three components—research, demonstration and transfer of knowledge and experience. The Project includes health education programme to create understanding and awareness in the community of the benefits of safe water.

During the first phase of the programme (1976-77) National Environmental Engineering Research Institute (NEERI) worked out technical guidelines for design, construction, operation and maintenance of the plant. It was during the second phase of the programme (1978 to 1980) the Central Health Education Bureau (CHEB), Directorate General of Health Services, Ministry of Health and Family Welfare associated itself with NEERI to integrate health education service component in the programme. The CHEB involved the Health Departments of the participating States, namely, Andhra Pradesh, Haryana, Maharashtra and Tamil Nadu.

A strategy for Health Education and Community participation was developed by the Central Health Education Bureau which later helped participating States develop the plans of operation for their respective project areas, implement and evaluate these. The whole project was divided in four phases—preparatory, planning, implementation and evaluation. Each phase began its operation in the project areas at different point of times and lasted for different durations.

The report presented here describes the strategy of health education component integrated in the water supply project in the rural community. I hope the present report will be helpful for the States in India and to other countries which are launching similar projects.

The services rendered by Shri P.N. Khosla of the Editorial Section of the Bureau in editing and production of this report are highly appreciated.

B. C. Ghosal.

(DR. B. C. GHOSAL)
DIRECTOR, CHEB

New Delhi
Date: 2-9-1985

SECRET

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SECRET

Introduction

1.1. Physical Features

India, covering 2.4 per cent of the earth's land area, and supporting 14.3 per cent of the world's population, is one of the most densely populated countries of the world. It stands out significantly among the countries of the southern Asia by its peninsular location. The formidable Himalayas forms the international boundary in the North. A stretch of about 3,000 km. of Arabian sea separates India from North East Africa in the West, and 400 km. of Bay of Bengal separates it from Burma in the East. In the South lies the vast stretch of Indian Ocean down to the Antarctic continent.

India has a total land area of 3,280,483 sq. km. The main land comprises three well-defined regions, the great mountain zone, the Indo-Gangetic plains

and Southern Peninsula. The Indo-Gangetic plains are formed by the basins of three distinct river systems—the Indus, the Ganges and the Brahmaputra. The peninsular plateau is marked off from the Indo-Gangetic plains by a mass of mountain and hill ranges.

The rivers in India may be classified as Himalayan rivers, the Deccan rivers, Coastal rivers and rivers of the Inland drainage basin. The Himalayan rivers are generally snow-fed and have continuous flow throughout the year. During the monsoons, these rivers discharge maximum amount of water due to heavy rainfall in the Himalayan region and cause frequent floods. The Deccan rivers are generally rain-fed and therefore fluctuate in volume. The coastal streams specially of west coast are short in range and have limited catchment areas. Most of these

are non-perennial. The streams of the inland drainage basin of Western Rajasthan are few and far between. In India, rainfall is erratic. It varies from place to place and year to year.

1.2. Demographic Information

According to the 1981 census, provisional population as on March 1, is 683,810,051 against 548,159,652 in 1971. The decennial growth is 24.75 per cent. The birth rate is 36 and death rate is 14.8 per 1000 population. Life expectancy at birth is 54 years. The infant mortality rate (1971-SRS) is 122 per 1000 population.

Eighty per cent of India's population lives in 5,75,936 villages and the main occupation is agriculture.

1.3. Government set-up

India, a Union of States, is a sovereign, democratic Republic with the Parliamentary System of Government. Constitution of India is federal in structure with unitary features. The President of India is the constitutional head of the executive of the Central Government, but the executive powers vest in the Council of Ministers collectively responsible to the House of the people (the Lok Sabha) for which elections are held every five years. Similarly in the constituent States, the Governor occupies the position of the head of the executive but in actuality the Council of Ministers are collectively responsible to the State Legislative Assembly (Vidhan Sabha) which carries on the executive government. There are twenty-two States and nine Union Territories. For the sake of administrative facility, the States and Union Territories have been divided into districts, divisions and talukas (blocks).

1.4. Public Health

(A) Health Services

Public Health is primarily the responsibility of the State Government. Important subjects which are dealt with by the Union Ministry are post-graduate medical education, promotion of medical research and airport health organization; International sanitary regulations and bilateral relations with W.H.O and other international organizations. The Union Ministry of Health and Family Welfare, however, sponsors and supports major health programmes to ensure good health of the people. In this area, the Central Council of Health and Family Welfare, a high powered organization comprising the Ministers of Health from different States and Union Territories advise the Central Ministry on the policies and programmes in the area of health and family welfare.

The broad objectives of the health programmes are to control and eradicate communicable diseases and to provide preventive and curative health services with accent on rural areas. This is achieved through a network of the hospitals in urban areas and Primary Health Centres in rural areas.

In the Fifth Plan (1974-79), the aim had been to provide minimum public health facilities, integrated with family planning and nutrition for vulnerable groups, i.e., children, pregnant women and nursing mothers. The accent was on: (i) increase in the accessibility of health services to rural areas; (ii) removing regional imbalances in health and medical care facilities, (iii) intensification of measures for the control/eradication of communicable diseases, (iv) qualitative improvement in education and training of

health personnel, and (v) development of referral services by providing specialists to the up-graded primary health centres in rural areas; and by removing deficiencies in the district and sub-divisional hospitals.

The Government is providing health through a well-nit network of 4,465 hospitals and 11,696 dispensaries. There are 5,373 primary health centres and 37,931 sub-centres in rural areas. The Health facilities are made available at the door steps of the villagers through Multi-Purpose Workers' Scheme (1974) and the Community Health Volunteers Scheme (1977).

(B) Health Problems

The major health problems facing the country are diarrhoeal diseases, malnutrition, malaria, tuberculosis, filaria, leprosy, eye diseases, etc.

In countries where environmental hygiene is of a high order, water-borne diseases have almost disappeared, and only sporadic cases occur owing to personal contact of food contamination by carriers.

During 1976, in India 17,482 cases of cholera occurred (861 died); 14,187 cases of dysentery with 2,331 deaths; 6,66,886 cases of gastroenteritis occurred (3,409 died); 18,403 cases of guinea-worm (22 died); 1,13,666 cases of infective hepatitis occurred (1,327 died).¹ Apart from these, other intestinal infections (helminthiasis, typhoid fever, para-typhoid and common diarrhoea) are also prevalent. Report of

evaluation team set up by the Ministry of Works and Housing, Government of India has estimated that 1760 million man-hours are lost every year due to a number of people who are incapacitated by water borne diseases.² An estimate of Rs. 4,500 million per year are lost on account of treatment, medicines and loss of production.

(C) Water Supply

(a) Organization

The National Water Supply and Sanitation programme was launched in 1954 as a part of the health plan to assist the States in urban and rural water supply and sanitation facilities in the country. A Central Public Health and Environmental Engineering Organization (CPHEO) was set up in 1956 to provide technical advice/guidance to the State Governments in the preparation and execution of their schemes. The programme and the organization were transferred to the Union Ministry of Works and Housing in February, 1973.

(b) Problem

While describing the magnitude and dimension of the water supply problem, the Report on the National Water Supply and Sanitation Committee observes, "The provision of safe water supply to the villages, both acceptable in quality and adequate in quantity poses a variety of problems varying between region, depending on the local hydro-geological features. The vastness of the area, apart from the large number of villages adds to the magnitude of the problem. The technical,

1. Government of India, Ministry of Health & Family Welfare, Bureau of Health Intelligence, Dte. General of Health Services, New Delhi, Pocket Book of Health Statistics of India 1976 and 1977.

2. Government of India: Ministry of Works and Housing, (Central Public Health and Environmental Engineering Organization)—Manual of Water Supply and Treatment (Second Edition); New Delhi: 1977.

administrative, financial, procedural and maintenance problems of a programme to encompass the entire rural area are a challenge to effective planning.³ Rural water supply and sanitation forms the single potent factor for the rural population. Because of the long neglect in the past, the subject assumes an importance and urgency of its own under the National Plan. Almost all quarters are agreed that the provision of minimum measures of safe water supply and sanitation in rural areas would brook no delay.

It is well recognised that if safe and wholesome water is made available in adequate quantity, 90 per cent of the water borne diseases will disappear. A basic purpose of water supply improvement is to provide adequate quantity of safe water for human use, primarily for drinking and culinary purposes and secondly for bathing, washing, etc. Side by side, rural sanitation also needs attention. With special emphasis on hygienic disposal of human excreta, and sanitary disposal of liquid wastes.

The Health Survey and Development Committee Report (1964) showed that only 16 per cent total number of towns in India had protected water supply, which served only 6.15 per cent of the population. While for rural area there was very little protection in the water supply as it is drawn from sources open to contamination.

The Environmental Hygiene Committee (1948-49) recommended a comprehensive plan to provide water supply and sanitation facilities for 90 per cent of the population within a period of 40 years. Efforts were made during the Five Year Plans to tackle the problem. During the

First Five Year Plan (1951-56), 252 urban water supply and sanitation schemes for a total estimated cost of Rs. 45 crores, 133 rural water and sanitation schemes for a total estimated cost of Rs. 13.5 crores were approved for different States under the National Water Supply and Sanitation Programme. Actual expenditure incurred was about Rs. 10 crores on urban and about 5.60 crores on rural schemes.⁴ The expenditure under Local Development Water Programme was Rs. 7.25 crores which also covered construction or renovation of 29,650 wells.

During the Second Five Year Plan (1956-61), 208 urban schemes at an estimated cost of Rs. 27.9 crores and 214 rural schemes at an estimated cost of Rs. 5.48 crores were added. The total expenditure incurred during the plan period was about Rs. 42 crores on urban and about Rs. 18 crores on rural schemes. The expenditure under Community Development Programme during the Second Five Year Plan was Rs. 11.5 crores and under Local Development Programme Rs. 13 crores. The estimated number of wells constructed and renovated during the period was 453,000 and 102,050 respectively. In addition, about Rs. 3 crores were spent under welfare of Backward Classes Programme under which 20,000 wells were estimated to have been constructed or renovated.⁵

The Third Five Year Plan (1961-66) provided Rs. 22 crores for urban water supply and sanitation schemes and Rs. 67 crores for rural water supply schemes.⁶

The National Water Supply and Sanitation Committee (1960-61) went into the

4. *Op. cit.*

5. *Op. cit.*

6. *National Environmental Engineering Research Institute, Nagpur - Annual Report 1977.*

3. *Government of India, Ministry of Health, Report of the National Water Supply and Sanitation Committee, New Delhi, 1960-1961.*

details of the problem and pin-pointed the problems in the implementation of National Water Supply and Sanitation Schemes. A preliminary assessment during the Third Five Year Plan revealed that there were about 90,000 villages which have no source of water within a distance of 1.6 km.

In the Fourth Five Year Plan (1969-79), an emphasis was laid on Water Supply and Sanitation. The Government of India had given utmost priority to rural water supply in framing of the Fifth Five Year Plan; and allocations in the Sixth Five Year Plan have been further augmented.

Under the Minimum Needs Programme and the Accelerated Rural Water Supply Programme, the Government proposes to fulfil the basic needs of safe water in all the problem villages in the country by 1985. As on 1 April 1980, there were still two lakh problem villages in the country where drinking water is not available within a distance of 1.6 km or the water table was below the depth of 15 metres or where available source is unhygienic. As on 1980 the coverage in the water supply and sanitation sector in India was 82 per cent under Urban Water Supply and 30 per cent under Rural Water Supply and 27 per cent under Urban Sanitation and 2 per cent under Rural Sanitation.

(c) Constraints

A major single limiting factor in the development of water supply in general and rural water supply programme in particular has been inadequate financial inputs. In the First Five Year Plan only 0.8 per cent of total plan outlay were allocated, and in the Fifth Five Year Plan 1.5 per cent of total outlay was allocated. In view of poor outlay allocated in the Five Year Plans for water supply, the CPHEEO (Central Public Health Environmental Engineering Organization) has projected the requirement of funds to the tune of Rs 10,900 crores.

Other limiting factors that assume importance are lack of trained personnel at appropriate levels; inadequate and inappropriate organizational and administrative set-up, undefined or overlapping responsibilities of numerous agencies; low village income; shortage of material required; failure to collect adequate charges from water users, frequent failures in water supply due to poor operation and maintenance procedures; difficulties in communication between widely dispersed rural systems and the supporting agencies, and lack of public health education, resulting inadequate appreciation of the advantage of safe water supply. Perhaps the last one is very important and has far reaching consequences.

7. Chatterjee, P.K. and Vengopal, V. "Status of Water Supply in India - Aspects and Prospects". *South Hindu*, Vol. XXV, No. 6, June 1981.

Slow Sand Filtration in India

2.1. Slow Sand Filtration

The goal of the International Water Supply and Sanitation Decade Programme is to provide safe water and effective sanitation for all population of the world by the year 1990. "To achieve this cherished goal in a time-frame of a decade needs political will, public support and massive mobilization of resources at all levels."¹

The objective* of water supply programme is to supply water :

(a) that is absolutely free from risks of transmitting disease, is pleasing to

1. WHO: International Reference Centre for Community Water Supply, the Netherland - Annual Report--1979.

* Reproduced from the Report of the Environmental Hygiene Committee, Government of India, Ministry of Health, October, 1949.

senses and is suitable for culinary and laundring purposes;

- (b) in adequate quantity for all domestic and public purposes for at least a generation from the time of installations;
- (c) with the least possible physical strain to the consumers taking into consideration the local circumstances; and
- (d) for at least 95 per cent of the time.

Slow sand filtration is a water treatment technique which can be used to advantage in many rural water supply systems. When surface water is the only available source of raw water, slow sand filtration will frequently prove the most simple, economic and reliable method to prepare safe drinking water. In the slow

sand filter the water percolates slowly through a porous bed of filter medium. During this passage the physical and biological quality of the raw water improves considerably. In a mature bed a thin layer forms on the surface of the bed. This filter skin consists of a great variety of biologically active microorganisms which break down organic matter, while also straining out a great deal of suspended inorganic substances. After some months the filter gets clogged. The filtration capacity can be restored by cleaning. Design and construction of slow sand filters is fairly simple. The filters can be constructed with locally available material by local craftsmen. After some training, operation and maintenance may well be taken care of by a member of the community. The cost of operation and maintenance of the system is low. Fuel or power are sometimes required for pumping, and quantity of chlorine compounds for safety chlorination of the effluent of the slow sand filter plant, no chemicals and hardly any spares are otherwise needed for prolonged functioning of the filter.

2.2. Early Experiments

In India water purification by slow sand filtration has been in use since 1865 when the first slow sand filters were installed at Palta near Barrackpore, about 21 km from Calcutta (West Bengal) to treat raw water from the Hoogly river. Similar filters were installed in Kanpur, Agra, Varanasi, Allahabad and Lucknow in Uttar

Pradesh. Such filters are now extensively used in Haryana and Punjab.

2.3. Location of the Present Plants

The World Health Organization; International Reference Centre (W.H.O.:I.R.C.) for Community Water Supply, the Hague, the Netherlands, as a part of its world-wide promotional activities in the field of water supply initiated research-cum-demonstration programme of SSF in seven countries—Columbia, Ghana, Jamaica, Kenya, Sudan, Thailand and India. The primary goal of the SSF Project is to promote slow sand filtration water supply for community in developing countries. The National Environmental Engineering Research Institute (NEERI), Nagpur, is one of the collaborating centres of WHO:IRC in India.

The study was launched by NEERI in January 1976. During the first phase of the programme (1976-77), technical guidelines for the design, construction, operation and maintenance of the plant, etc., was worked out. During the second phase (January 1978 to December 1980), field testing and evaluation of the village demonstration plants were undertaken in four different States in India, namely, Andhra Pradesh, Haryana, Maharashtra and Tamil Nadu.

The WHO:IRC and the NEERI have involved the Central Health Education Bureau (CHEB), Directorate General of Health Services (DGHS), for the extension and community participation aspects in the project.

Health Education Strategy

3.1 The Health Education Service Project— An Action Research Study, was initiated in India at the end of 1977 and in early 1978 in four States in India. The areas in which projects were operative are Burujwada in District Nagpur (Maharashtra), Kammaya Koundan Patti in District Madurai (Tamil Nadu), Pothunura in District West Godavari (Andhra Pradesh), and Abubshahar group of villages (Abubshahar, Sekta Khera and Dhani Rajpura) in Haryana. A quasi-experimental design (time series design) was used in the present study. Under this design a base-line survey was done in the project areas to establish the knowledge, attitude and practice status of the community in regard to utilization of the existing water-sources, knowledge and practices regarding water-borne diseases and the disposal of liquid and solid wastes including human excreta. After establishing the base-line, educational

treatment was given to the community. The community was involved in each and every educational and service activities. Periodic assessment of the impact of the educational and service activities were made and in 1981-82, final evaluation of the health education service activities in terms of its impact on the community *per se* was done.

3.2. Objectives

The general objectives of the study were to:

- (i) evolve a methodology of assessing the impact of health education in preparing community for effective utilization of improved water supply;
- (ii) study the impact of improved water supply on health status of the community with special reference to

child population (0-5 years of age) during the project period (1978-82);

- (iii) to document, monitor and evaluate all aspects of educational programme relating to water and sanitation with a view to utilize the experience and knowledge in other projects in India as well as in other developing countries.

The specific objectives of the study were to:

- (a) undertake a study of the community with a view to assess its resources, potentials and educational needs;
- (b) develop suitable educational aids, materials for use in the community;
- (c) educate the community on acceptance of improved water supply for drinking purposes;
- (d) find out the extent to which the community uses improved water supply for drinking purposes;
- (e) identify the problems (financial and other) faced by the people in utilizing improved water supply;
- (f) help people of the project areas to acquire adequate knowledge regarding general health, environmental sanitation, selected communicable diseases and availability of health facilities;
- (g) assess the impact of the process of health education and improved water supply on health of the people.

3.3. Methodology

The Project Managing Committee for India was overall in charge of the SSF Project in India. The Director, CHEB, was one of the members of this committee. Responsibility of incorporating health education and community participation in the project rest with the Central Health

Education Bureau, which carried out the activities in collaboration with the health and public health engineering staff of the health departments of the participating States. Health Education Service activities were carried out with the routine and existing manpower and no additional inputs were added in the area.

The project at Burujwada (Maharashtra) was developed as a pilot project area for demonstration purposes. Methodology developed and operated in the village Burujwada was extended to other three project areas. In this village the CHEB worked directly with the District Health Authorities, Nagpur and the NEERI. In other States such as Tamil Nadu, Haryana and Andhra Pradesh, the CHEB, had worked in close collaboration with the respective Directorates of Health Services/ State Health Education Bureaux. These provided technical support, guidance and supervision. At the State level a trained Health Educator under the guidance of the Director of Health Services was coordinating the activities, and at the district level a trained Health Educator or Health Officer was responsible for carrying out the activities. At the Primary Health Centre (PHC) level responsibility of implementing the health education service programme was entrusted to the Medical Officer in charge.

The Health Education Service Programme was phased as below:

- * Preparatory phase (September 1977 to August 1978)
- * Planning phase (September 1978 to December 1978)
- * Implementation phase (January 1979 to 1981)
- * Evaluation phase (continuous).

As the work in the different project areas was initiated at different points of time, a period of different phases was also different. Each State conducted their activities following the above five phases.

3.4. Preparatory Phase (September 1977 to August 1978)

(a) While developing the plan of action, its implementation and evaluation, all factors such as time, local resources available and other situational factors were taken into account. Each participating health authority selected the State coordinator who was made responsible for the project. In Haryana, Health Education Training Officer; in Tamil Nadu, Health Educator Training Officer; Epidemiologist from NEERI in Maharashtra; and in Andhra Pradesh, Assistant Director, Health Education were the officers entrusted with a responsibility of coordinating health education service activities. At the district level, Health Officer (Chief Medical Officer in Haryana; District Health Officer in Tamil Nadu and Maharashtra, and District Medical and Health Officer in Andhra Pradesh) were entrusted responsibility of the project. At the block level, (local level) Medical Officer in-charge of the Primary Health Centre was made responsible to carry out health education service activities in all the states.

(b) Base-line Data

The CHEB developed the Village Information Schedule to collect minimum essential general information for the project villages. It included information on the topographic, demographic and social characteristics of the village; leadership pattern and group dynamics, governmental and non-governmental agen-

cies working in the village; welfare organizations, educational institution, channels of communication, environmental sanitation; attitude of the community towards government programmes; social welfare programme, community organization, local leadership, status of the village in respect of various health programmes run by the Primary Health Centre; health statistics of the village, prevalence of water-borne diseases during the last three years; and general condition of the village.

The Family Health Survey Schedule was used to collect necessary information from each family in the project area. It was administered to collect information on religion, caste pattern, type of family, health status of each member; practices adopted by the family to treat a patient in the family, diet pattern for pregnant, lactating mothers, infants during weaning, children between one to five years of age and old people; place for kitchen-garden; environmental sanitation, type of house, accommodation available, ventilation, place for keeping animals; sources of water for drinking, bathing and washing; data on personal hygiene; method used for disposal of liquid and solid wastes etc.

The Family Welfare Schedule was used to ascertain family welfare status of each eligible couple in the project area.

Schedule for Educational Diagnosis of the community provided an insight in the knowledge, attitude and practice status of the community regarding water borne diseases. All these tools were pretested before administering to the respondents. The CHEB had developed a design of data analysis in order to attain uniformity in data analysis for all the project areas.



Orientation of School Teachers in Health Education

(c) Health Education Strategy

The Health Education Strategy in the second phase developed by the CHEB was presented at the International Meeting on Expansion and Community Participation in SSF Project held in Voorburg (The Hague), The Netherlands from May 29 to June 3, 1978. The Strategy was modified in the light of comments/suggestions made by the participants

(d) Inter-State Meeting

In India, an Inter-State meeting of the participating States was held in Nagpur from July 4 to July 7, 1978. It was jointly organized by the CHEB and the NEERI. In this meeting, the project engineers/

higher officers from the Public Health Engineering Department, Incharge of the State Health Education Bureaux, the concerned supervisors and peripheral workers, and the village headmen of the concerned village councils participated. The purpose of the meeting was to facilitate coordination and uniformity in the implementation of Health Education Project in the participating States. It provided an opportunity to the staff of the participating States to meet each other and acquaint themselves with the nature and progress of the activities relating to engineering and health. It also provided first-hand knowledge regarding SSF Plant, sanitary latrine, soakage pit and treatment of waste water to the participants.

**ENGINEERING
COMPONENT**

**HEALTH EDUCATION
COMPONENT**

**National Environment Engineering
Research Institute**

**Central Health Education
Bureau**

**Chief Engineer
Public Health**

**Advisory Group at
State Level**

***Director of Health Services**

***Chief Engineer (P.H.)**

***Incharge State Health Education
Bureau**

**Directorate of State
Health Services**

***Director/CHEB**

***Representative of the NEERI**

***Rural Development
Officer**

**District Level Advisory and
Planning Group**

***Chairman of Zila Parishad**

***District Health/
Medical Officer**

***Representative of SHEB**

**District Health
Office**

**Executive Engineer
Public Health**

***Executive Engineer Public
Health**

***District Health
Educator**

***Research Officer
CHEB**

**Planning and Steering
Committee at Block Level**

***Chairman of Block Samiti**

***Block Development
Officer**

***Medical Officer Incharge
PHC**

**Medical Officer
Primary Health
Centre**

**Assistant Engineer
Public Health**

***Assistant Engineer
Public Health**

***District Health Educator**

***Sanitary Inspector**

***Lady health visitor**

The health education strategy developed by the CHEB was discussed in detail in the meeting. The comments/suggestions and recommendations received from the participants were included in the final strategy. In the meeting, it was agreed to develop a mechanism for collecting required information from the project areas, consolidating such information and then sharing with other concerned personnel engaged in the project. The participants were to prepare detailed plan of operation for their respective project village/villages on common lines. They were also to prepare and develop appropriate educational aids and literature for the project and circulate to all the participating States.

Mechanism for co-ordination and co-operation

Advisory Group at State Level

At the State level, an Advisory Committee was formed with the representatives from both health and engineering departments. This group consisted of:

- * Director, Health Services of the States
- * Director, Central Health Education Bureau
- * Chief Engineer, Public Health Engineering of the State
- * In-charge of the State Health Education Bureau (Except Maharashtra)
- * Concerned Rural Development Officer at the State level
- * Representative of the NEERI.

Such Advisory Groups were constituted in all States except Maharashtra, as NEERI and CHEB were directly responsible to carry out the activities with close involvement of the local health and the public health engineering authorities in

this State. This group met frequently in the beginning but thereafter met as and when required. The group made available required resources for carrying out the Health Education Service Programme; fostered proper coordination and cooperation within their staff; directed the programme and solved the problems whenever arose.

Advisory and Planning Group at District Level

An Advisory and Planning Group was formed at the district level. It was represented by the Chairman of the Zila Parishad or equivalent statutory body (in the States where Zila Parishad was not functioning); Chief Medical/District Health Officer, representative of State Health Education Bureau of Public Health Engineering at District Level; District Health Educator (Wherever in existence) and the Research Officer of CHEB. The members of the group made available the resources which were required for the effective implementation of the 'plan of action' in the project villages and rendered consultation and advice in implementation, recording and reporting and evaluation of the health education service activities. The group met frequently in the beginning and at least once in three months, but later on it met as a need arose. The members of the group also supervised the project activities of their respective departments in the project areas.

Planning and Steering Committee at Block Level

To carry out day to day health education service activities in the project villages, a Planning and Steering Committee was formed at Primary Health Centre Level. It consisted of the Chairman of the Block

RECORDING AND REPORTING SYSTEM

ORGANIZATIONS

CENTRAL HEALTH EDUCATION
BUREAU

DIRECTORATE OF MEDICAL
AND HEALTH SERVICES

STATE HEALTH EDUCATION
BUREAU

DISTRICT MEDICAL AND
HEALTH OFFICE

PRIMARY HEALTH
CENTRE

SUB-CENTRE

ACTIVITIES

Review.
Screening.
Guidance and Advice.
Compilation.

Collection of
additional data.

Documentation.

Review of Quarterly
Progress Report.

Sending the Reports
of Central Health
Education Bureau.

Compilation of Reports.

Preparation of Quarterly
Progress Report.

Forwarding Report to
the District.

Maintenance of Records.

Preparation of Health
Progress Reports.

Maintenance of records.

Samiti or some such Statutory Body, Block Development Officer; Medical Officer in-charge of the Primary Health Centre; concerned Public Health Engineer responsible for the project; Health Educator at the district level; Sanitary Inspector of the PHC; Lady Health Visitor and village Sarpanch (Head-man). The Committee met once in a month. It had a task of reviewing progress of the project and decide a line of action to be taken in next month.

The proformae for recording and reporting of health education service activities were developed by the CHEB in consultation with the participating States. These were meant for the respective States to submit their monthly/quarterly progress reports of the activities.

In order to get proper feed-back from the project areas the CHEB also developed a proper mechanism under which the Medical Officer in-charge of the Primary Health Centre submitted monthly progress report of the health education service activities to the District Health Authorities who, in turn prepared a quarterly report in a prescribed proforma and passed on it to the Directorate of Health Services/State coordinator. At the State level, a report received from the District was scrutinized and submitted to the CHEB. The CHEB, on receiving such reports, compiled to study and assess the progress of the health education activities.

(e) *Monitoring the Project*

Monitoring the project was done mainly through: (i) screening quarterly reports; (ii) providing guidelines to the States; (iii) supervisory field visits by concerned staff from the Centre, States and District levels; and (iv) by providing necessary

technical help and support on the spot. The CHEB officers visited the project sites frequently and helped the project staff in developing effective plan of operation, in training the staff and local leaders, conducting survey, maintaining proper records and in preparation of reports and developing specific educational aids.

(f) *Base-Line Data*

Data regarding health status of the community were gathered through various schedules; such as Village Information Schedule, Family Health Survey Schedule, Family Welfare Schedule and Educational Diagnosis Schedule. The data so collected provided information on health status of the community, their attitude, knowledge, practices about water sources and use, water-borne diseases, social interaction and group dynamics, channels of communication and leadership pattern. This information then compiled and analysed and in the light of the findings, a sound plan of operation was developed for each of the project areas. A summary of the findings of the base-line survey is presented here and a detailed account is given in respective project reports.

Burujwada (Maharashtra)

The village Burujwada is in Kalmeshwer Block in District Nagpur, Maharashtra. The enumerated population of the village in 1977 was 594 consisting of 135 families. The Kunbhi (The agriculturists) was the dominant caste.

The village had a joint statutory village council consisting of seven members. Two wells, four private hand pumps and a nearby river were the main sources of water to the villagers. Water in one of the wells was highly saline and unfit for

drinking. The river water, although found to be contaminated, was used for drinking, bathing and other culinary purposes. The containers in which drinking water was stored by most of the villagers were neither properly covered nor regularly cleaned. Ninety-three families used some utensils to store water which necessitated emersion of hand and another 12 families used rusted tins for drawing water from the containers.

The base-line data suggested that the health status of the community was poor. There was high prevalence rate of enteric parasites. Two-third of population suffered from gastroenteritis. Although 64 of 89 families had hand flushed latrines, these were used mainly by children, old, invalid and sick persons in the family. Fifty per cent families used water for abluting and drinking from the same stored water. However, a majority of persons used water to clean their hands after abluting.

As regards vaccination, it was found that there were 50 unprotected children against smallpox. Only 80 persons were immunized against tuberculosis as against 292 in target group. Out of 78 target children only 11 had received two doses of D.P.T.

A little more than three-fourths (76 per cent) visited private medical practitioners for treatment for their sickness. Personal hygiene of school children did not appear to be satisfactory.

The educational diagnosis of the community indicated that 82.5 per cent of the sample had correct knowledge about signs and symptoms of diarrhoeal diseases; but knowledge regarding its spread, treatment and prevention was very low. Knowledge of the community in respect of

signs and symptoms, mode of spread, treatment of and prevention from disease like cholera, typhoid, jaundice, scabies, etc., was found to be low.

Kamaya Koundan Patti (Tamil Nadu)

The Slow Sand Filtration Project in Tamil Nadu was located in the village Kamaya Koundan Patti (K.K.Patti) in Cumbum Block (District Madurai). The population of the village in 1976 was 12,226, distributed in 2555 families. The population consisted of major castes of the States, i.e., Piramalai, Kallar, Vakkaliga, Gounder, Telegu, Chettiyar and Scheduled Castes.

Both indigenous and modern channels of communication were in force; drum-beater, beat notices, messengers; and movies, radios, newspapers and magazines.

As for the water supply position, town panchayat was supplied with water drawn from composite water supply scheme supplying water to eight Cumbum Valley Panchayats. Per capita supply of water was 4.5 litres only then. The Slow Sand Filtration Scheme had a Plan to supply 13.5 litres per head per day.

There were five dry public latrines with five seats each. Those were maintained by the Sanitary Workers employed by the Town Panchayat. Besides there were 61 private dry type of latrines. The services of Town Panchayat Sanitary Workers were also made available for individual families. The village had 25 RCAP latrines. The females used the trench dug by the Town Panchayat for defecation purposes, while males used river side for easing themselves. Only 30 per cent of houses were covered with

common drains constructed by the town Panchayat, but their maintenance was found to be poor.

The health status of the community was far from satisfactory. Out of 11,097 patients treated in the dispensary which was located in the village, 196 had suffered from dysentery and another 1,071 from gastroenteritis and other diarrhoeal disorders. About 20 per cent of the villagers were infested with roundworm and hookworm, and it was common among the labourers working for the cardamom estate.

The educational diagnosis further revealed that the people were not aware of the causes, mode of spread, signs and symptoms, treatment and prevention of the water-borne diseases, particularly, diarrhoea, dysentery, gastroenteritis and jaundice.

Pothunuru (Andhra Pradesh)

The Slow Sand Filtration Plant in Andhra Pradesh was located at the village Pothunuru in the West Godawari District. Its population according to 1971 census was 2,559 with 629 families. The village population is mainly distributed in three religious groups—Hindu, Christian and Muslim. 'Kama' was the dominant caste following agriculture as their main occupation. The political life of the village was smooth and no factions in the village were reported to have emerged. The community attitude towards government programme was neutral. There was a "Gram Panchayat" (Village Council) with 11 members.

Eight drinking water tanks in the village were the main source of water for the village till the water supplied through

the installation of the Slow Sand Filtration Plant. The tanks were filled with water fetched from Godawari river. The village also had community and private wells, but water in these wells was not potable. The chlorination of water was not done as a matter of routine. Only pot-chlorination of water was being done mainly during the outbreak of an epidemic.

As regards water-borne morbidity pattern, in 1978, there were 121 cases of dysentery, 163 cases of diarrhoea and 126 cases of scabies.

The educational diagnosis of the community showed that the people were not able to distinguish between the contaminated water and potable water and had no knowledge about water-borne diseases.

Only fifty-two per cent knew signs and symptoms of diarrhoea, dysentery and 67 per cent of cholera. Knowledge about signs and symptoms of T.B was moderate (44 per cent), about typhoid (19 per cent), worm infestation (13 per cent), sore eyes (20.6 per cent) trachoma (4 per cent), cataract (6.5 per cent), itching (22 per cent), boils (34 per cent), filaria (28 per cent), whooping cough (23 per cent), diphtheria (15 per cent) and tetanus (24 per cent) was not adequate. But knowledge regarding cause of these diseases were low, in that diarrhoea (7 per cent), dysentery (19 per cent), cholera (39 per cent), worm-infestation (7 per cent), tetanus (11 per cent), diphtheria (10.5 per cent), T.B. (20 per cent), typhoid (9 per cent), whooping cough (7 per cent), sore eyes (5 per cent), boils (23 per cent) and filaria (11 per cent). With respect to causes of eye ailments besides sore

eyes, people were found to have no knowledge about the causes of trachoma, cataract and itching. Moreover, people's knowledge about mode of spread, treatment and prevention was at lowest ebb.

Abub-shahar (Haryana)

Abub-shahar in Dubwali Block of the Sirsa District was the place where the project was located, covering three surrounding villages—Abub-shahar, Sekta Khera and Dhani Rajpura with total population of 7587. There were 1404 families. The major castes represented were Bishnoee, Jat, Rajput, Ahir and Harijan. These villages fell under the jurisdiction of Primary Health Centre, Odhan which was about 45 km. from the village, Abub-shahar. The sub-centre was located within the vilage.

The village had two major sources of water. These were, the Rajasthan

Canal (to the North-East of the village), Bhakara Canal (South-East of the village) and the village pond. Water from these sources was contaminated, as a result villagers suffered from various water-borne diseases. The data for 1979 showed that the 368 persons suffered from diarrhoea, 305 persons suffered from dysentery and another 507 persons suffered from boils. Sanitary conditions in the village too was not satisfactory. The dug-well latrines in houses were sparingly used. Most of the people defecated in the open. Though the Panchayat had provided the compost pits for garbage disposal, these were hardly used by the residents.

The educational diagnosis showed that the people had little knowledge regarding contamination of water; signs and symptoms, mode of spread, treatment and prevention of water-borne diseases mainly diarrhoea, dysentery, gastroenteritis, jaundice, typhoid and cholera.

Planning Phase

(September 1978 to December 1978)

4.1. Plan of Operation

The educational and sociological data collected provided a foundation to build a sound health education service programme for each of the project areas. While planning the programme, the interest, customs, belief, attitudes, taboos, past experiences, educational level, socio-economic status and leadership pattern of the community were kept in mind. Besides the study was also done to know the way in which the information was transmitted among the people, the channels of communication operate in the community and the barriers existed in dissemination of health information.

4.2. Problem

During the planning phase of the programme, involvement of the community

through formal and informal leaders was attained at the maximum. Considering special problems of the socially weaker sections, the leaders of the weaker sections were involved in the health education service planning for each of the project villages. A similar plan of action were developed for each project. The problems observed related to water in most of the project areas were unsafe sources of drinking water, poor method of storing water for drinking, unhygienic and defective method of drawing water for drinking from the storage containers, unsafe method of disposal of liquid and solid waste, high prevalence of water borne diseases (diarrhoeal diseases) and enteric parasites in the community. It was also observed through the educational diagnosis that knowledge of the community regarding causes, mode of spread and prevention of water borne diseases was low in the

community. As the people had a practice to use contaminated sources of water occurrence of diarrhoeal diseases was considered to be a routine feature. The people viewed this as a condition and not the disease which should be cared for.

4.3. Objectives

After examining the data collected, resources and time available, the objectives for the Health Education Service Programmes were worked out. The general objectives of the project were:

- i) to introduce community to the filtered water supplied through Slow Sand Filtration Plant; to prepare to store the filtered water supplied through Slow Sand Filtration Plants, and use it hygienically;
- ii) to document systematically all aspects of health education services.

The specific objectives were to help people to:

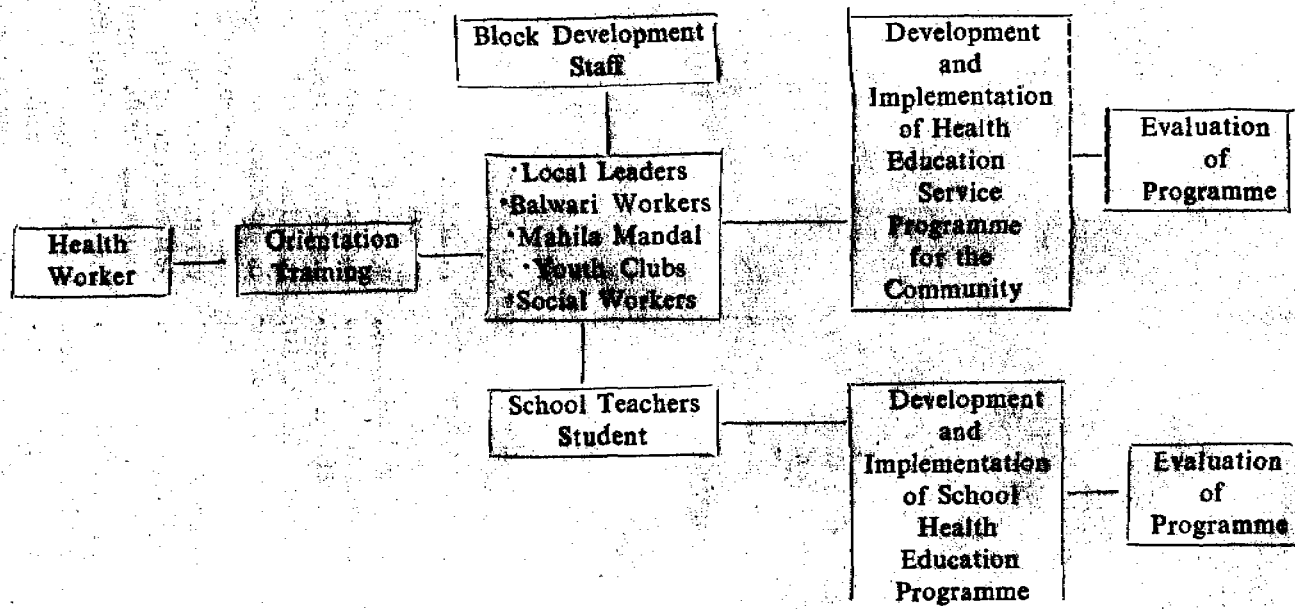
- 1) acquire correct knowledge regarding water-borne diseases;
- 2) appreciate difference between safe water and contaminated water;
- 3) acquire knowledge regarding common methods of making water safe for human consumption from the doubtful sources;
- 4) acquire understanding of Slow Sand Filtration method of making water safe, storing it safely;
- 5) acquire desirable personal hygiene habits; and
- 6) acquire knowledge regarding causes, treatment of and prevention from water-borne and water related diseases.

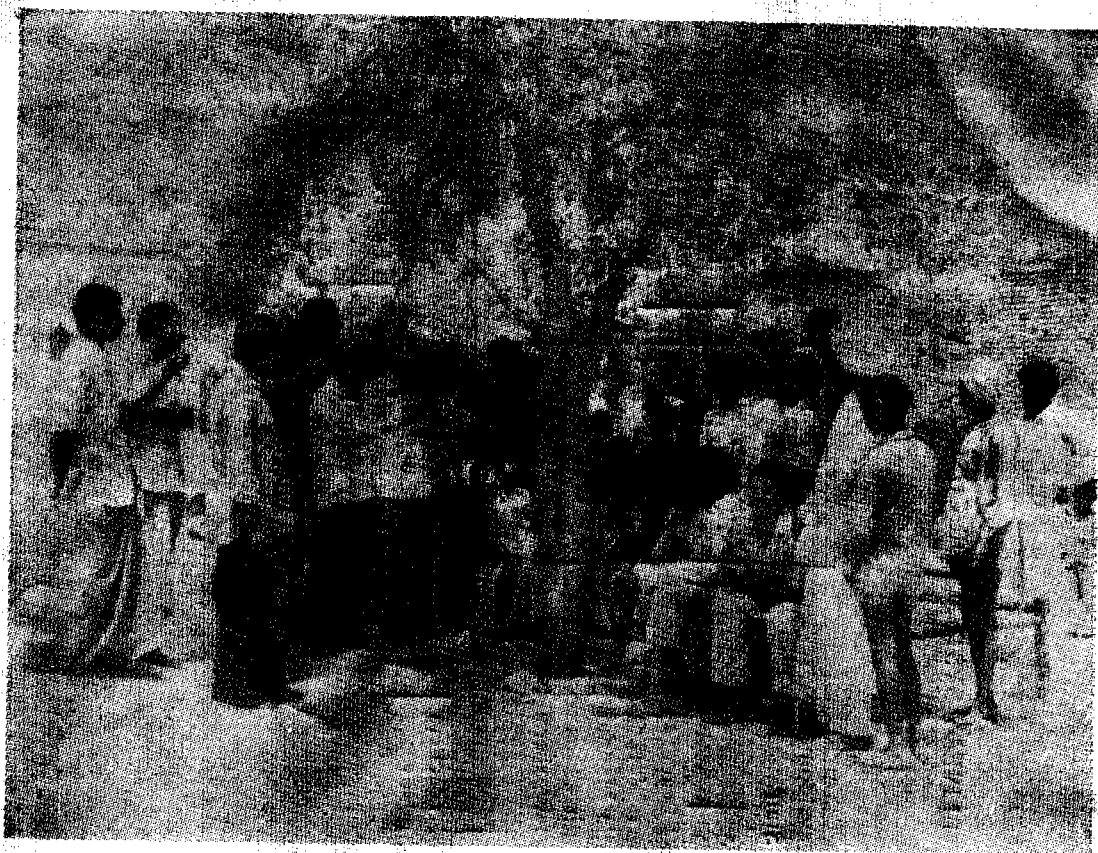
4.4. These objectives were attempted to achieve through systematic planning and

effective implementation for which the activities included: (i) orientation training to health, block development staff and local leaders; (ii) organization of school health education service programme; (iii) organization of mass meetings, group meetings, displays, exhibition, poster campaigns and individual counselling and guidance. A plan for evaluation—concurrent, mid-term and terminal—was developed. The indicators of fulfilment of each objective were worked out and the criteria of success were decided upon. The method of evaluation was also clearly laid down and the responsibility for carrying out evaluation programme was entrusted to specific and qualified officials. Individual State Health Education Bureaux with the technical help from the CHEB carried out the evaluation. The CHEB were to implement the programme in village Burujwada directly with the active involvement of the NEERI and the local health authorities in Maharashtra as a pilot project.

Specific educational aids were developed by the CHEB, and procured from agencies whenever required. Also the literature on water-borne diseases and environmental sanitation was prepared for field workers working in the project areas. Health education charts, specially for school children and flash cards on water-borne diseases, environmental sanitation, malaria, and immunization were developed and supplied to respective States. In addition, the table-tops (displays) entitled "Safe Water for Better Health" and "Environmental Sanitation" were developed and supplied to the States. Besides the concerned States themselves developed/procured educational aids for the programme. A set of guidelines for systematic field work were prepared and provided to the project areas.

HEALTH EDUCATION DELIVERY SYSTEM FOR COMMUNITY





Group Discussion with Villagers

4.5. Development of Leadership

As a first step in developing leadership, formal leaders of the community were identified. Those were Panchayat Members, 'Numberdars' (big landlords), 'Chowkidar' (village watchman), member of the caste panchayat, local school teachers, local bank agents, 'patwari' (revenue department staff), priest, gram sewak and panchayat secretary. Individual as well as joint approach was adopted to contact the formal leaders who were apprised of the health education programme in the Slow Sand Filtration Project. Their willingness to participate

in health education activities was ascertained. A list of the informal leaders was prepared by asking them who were the persons who could likely help in the programme. Special attention was paid to include those leaders who were defeated in the recent village council election. This was done so because their place in the village politics was important and their participation in the programme could remove probable opposition. Moreover, the caste leaders, medical practitioners and social workers working in the villages were convinced to lend their support to the programme for which they willingly lent. All those who were willing to

extend cooperation in the programme were given an orientation training with a view to make them understand the programme activities and their expected role therein. The Health Committee consisting of these leaders were formed, which helped the health worker in each activity. The health worker worked as the Secretary to the committee. This committee reviewed a progress of the 'plan of operation' in the village regularly and decided upon further line of action.

The leaders helped in organising mass meetings, film shows, group meetings, individual contacts of the families, organi-

zing the service programmes and thus helped solving problem that arose during the implementation phase.

4.6. Education of Community

Education of the community was done by the health worker through local leaders, youth organizations, 'Mahila Mandals' (ladies clubs), local social workers and volunteers, and local schools.

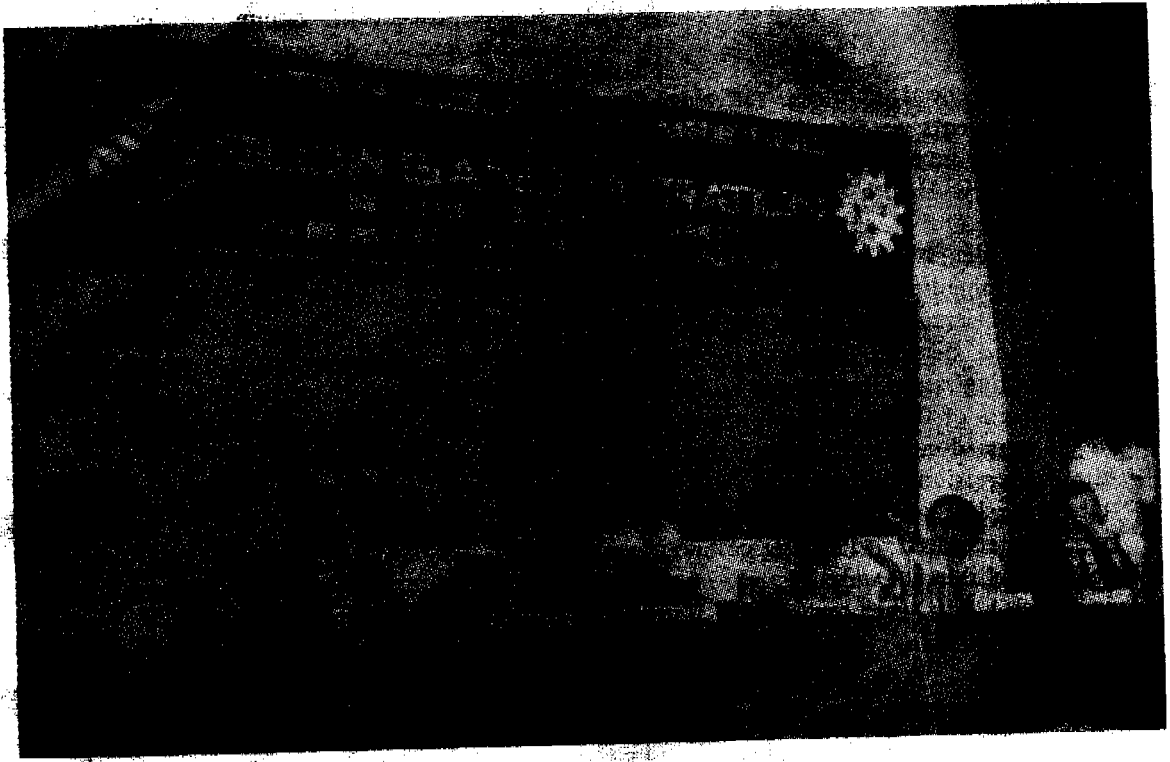
The members of these organizations were given orientation training initially and their knowledge was further strengthened by continuous individual counselling

Health Education to the Village Women by the Sub-Centre Staff



MODEL USED FOR DEVELOPMENT OF LEADERSHIP

- STEP I Listing of Formal Leaders
- STEP II
- * Contact Formal Leaders
 - * Find out those who are willing to participate in programme.
 - * Provide some Orientation training to them.
- STEP III
- * Prepare a List of Informal Leaders and persons who accepted the programme.
- STEP IV
- Contact Informal Leaders and Acceptors:
- * Find out those who are willing to participate in the programme.
 - * Find out satisfied and dissatisfied acceptors.
- STEP V
- * Make all efforts to satisfy the dissatisfied acceptors.
 - * Make satisfied Acceptors-Acceptor Leaders.
- STEP VI
- * Make willing Formal and Informal Leaders-Acceptor Leaders.
- STEP VII
- * Organise Orientation Training for willing Formal and Informal Leaders.
- STEP VIII
- * Encourage active participation of Leaders in all Health Education Service Activities.
- STEP IX
- * Form a Health Welfare Committee consisting of Active Leaders and Health Worker.



Shri Yashwantrao Chavan, the then Union Minister of Information and Broadcasting, speaking on the occasion. Sitting are (from left to right) Dr. B.S. Sundareshan, Director (NEERI), Dr. A.T. White, Shri P.K. Chatterjee, Advisor, CPHED, Dr. D.C. Chaturvedi, Director (CHEB) and H.A. Heljnen, Project Manager WHO:IRC.

and guidance to prepare them to take part in health education activities.

to motivate them accept the programme activities.

The 'willing' persons ('willing' persons were those who listened to the health workers, showed interest in the programme and considered that the programme would benefit them and the community), and the 'indifferent' persons ('indifferent' were those who listened to the health workers and did not oppose the programme activities but they were unwilling to accept the programme immediately on one or the other ground) were given required information through group meetings, mass meetings, direct individual approach, through local leaders and reference groups

4.7. School Health Education Service Programme

For health education service programmes in the school, the teachers were given training in the areas relating to water and water-borne diseases; diseases of the children; health education for schools, and role of the teachers in school health education programme. Medical examination of students was also conducted and on the basis of the specific educational programme related to ailments and diseases found among the children was

done along with a normal programme by the teachers with the help of the health staff.

The school children suffering from minor ailments were treated in the schools while more severe cases were referred to the Primary Health Centre and district hospital. The weekly "Health Parade" of the students was carried out and they were examined by the school teachers with respect to personal hygiene. Display on health and disease including safe water for drinking were organized in schools. Cleanliness of the school and its surroundings were done by the students under the supervision of teachers. Arrangements for latrines and urinals were made wherever required. Painting competitions to make children aware of and interested in health habits were organized. Immunization services for the school children were provided within the school premises. The teacher-parents meetings were also

attempted in certain cases. In some schools, the health committees consisting of students and teachers were formed. Students' personal hygiene were periodically assessed through surprise visits either by the district, State and the CHEB personnel.

4.8. International Appraisal Meeting

An International Appraisal Meeting of the participating countries was held in Nagpur from September 15 to 19 1980, in which each country presented its report related to the activities, both engineering and health education. This meeting provided an opportunity to share experience between engineers and social scientists on both technical and non-technical aspects of rural water supply. The deliberations of the meeting came with very useful set of recommendations and conclusions.

Evaluation Phase

The evaluation of the project activities had been a continuous process throughout the project period. Final evaluation was done against the following criteria.

The indicators were: use of filtered water by the families; safe storage of drinking water; soakage pits constructed by families; use of sanitary latrine by family members where there was one; washing of hands after defecation; decline in the cases of water-borne diseases and worm infestation; and use of the allotted pits for dumping garbage.

The programme was considered to be successful when it was observed that 80 per cent of the families had begun using filtered water at least for drinking, and equal number began storing drinking water in a clean vessel which was properly covered. Terminal evaluation was con-

ducted mainly with the help of personal interview and observation.

Information was collected on source of drinking water, ways of storing it and method of disposal of liquid and solid waste.

A list of the head of family was prepared; and both, male and female respondents were selected by using systematic random sampling method. In the case of male respondent, a head of the family, and in the case of female respondent a spouse of the head of the family were selected for interviewing. The data were collected with the help of a structured schedule prepared by the CHEB. The data were analysed on lines outlined in the strategy.

A summary of the major findings of

the evaluation are presented below for each of the project villages.

Burujwada (Maharashtra)

- * People used tap-water supplied by Slow Sand Filtration Plant for drinking and cooking purposes. Only few people used river water for washing clothes and bathing.
- * Drinking water was stored either in mud pots or brass pitchers. Storage vessels were generally clean and covered properly. For drinking purposes, people usually dipped a jug or glass into the pot, but cleanliness of jug or glass could not be ascertained.
- * There were 112 families in the village. About 93 hand flushed sanitary latrines were constructed. Out of these, 65 were in use as latrine and three were used as bathrooms, and another twenty-five were not in use. The main reasons for not using were reported that either the pan had sunk or soakage pit was choked or walls of the latrine collapsed. The families were prepared to use these if repaired and properly constructed.
- * Most of the families disposed off refuse and garbage at the allotted pits by the Gram Panchayat, and animal dung in the compost pits.
- * Every member of the family washed hands after defecation.

There was an appreciable increase in the knowledge of the community regarding signs and symptoms, causation, mode of spread, treatment of and prevention from water-borne diseases and water related diseases.

The evaluation revealed that there was no occurrence of any case of diarrhoea, dysentery, cholera, jaundice, typhoid after Slow Sand Filtration Plant started supplying water to the community.

Kammayya Kounden Patti (Tamil Nadu)

- * Eighty per cent of the families used tap water for drinking supplied through Slow Sand Filtration Plant and another 5 per cent used hand pumps.
- * For washing and bathing also a majority of the people used tap water, and about 33 per cent used river water.
- * As for the defecation practice, 26 per cent adult male, 39 per cent adult female and 33 per cent children used latrine while the rest used open fields.
- * Use of water for washing hands after defecation was common.

A study of 5 per cent sample (100 families) showed that there was much improvement in knowledge of the community regarding water-borne and water-related diseases. The respondents were found to be aware of the diseases caused by the contaminated water (diarrhoea 86 per cent, dysentery 65 per cent, cholera 72 per cent, typhoid 53 per cent, worm-infestation 24 per cent).

Most of them were able to state correct signs and symptoms of these diseases (79 per cent), but the knowledge about causation was poor while some were able to tell a mode of spread and their prevention. Most of them knew that these diseases could be treated by modern medicine.

Pothunuru (Andhra Pradesh)

* Almost all families in the village used tap water for drinking purpose provided by the Slow Sand Filtration Plant.

* A majority of the families used the same tap water for washing purposes. Only few families used canal and tank water for this purpose. Out of 629 families, only 50 had private latrines (septic tank type, bore-hole type and dry latrines) which they were using. There were two public latrines with six seats each and having septic tanks. There was one match type of public latrine. Still most of the people eased themselves in the open fields. Seven latrines were constructed after the project commenced.

* As for their habits after defecation, 11 per cent of the community members were washing their hands with earth and water; 29.6 per cent with soap and water, and rest of them with water only.

* Most of the families had stored drinking water in clean earthen/brass pitchers which were properly covered. Water was drawn from the pitcher either with a mug/jug/glass or with drawer, latter two with a long handle.

A sample of 54 heads of the families were interviewed to assess their knowledge regarding water-borne diseases. Seventy-two per cent of the respondents were able to mention more than three diseases caused by contaminated water. A majority of the respondents (54 per cent) were able to mention signs and symptoms of diarrhoea, dysentery, cholera, and 22.2 per

cent were able to tell correct cause of these diseases while their knowledge regarding prevention of these diseases was also fair (43 per cent).

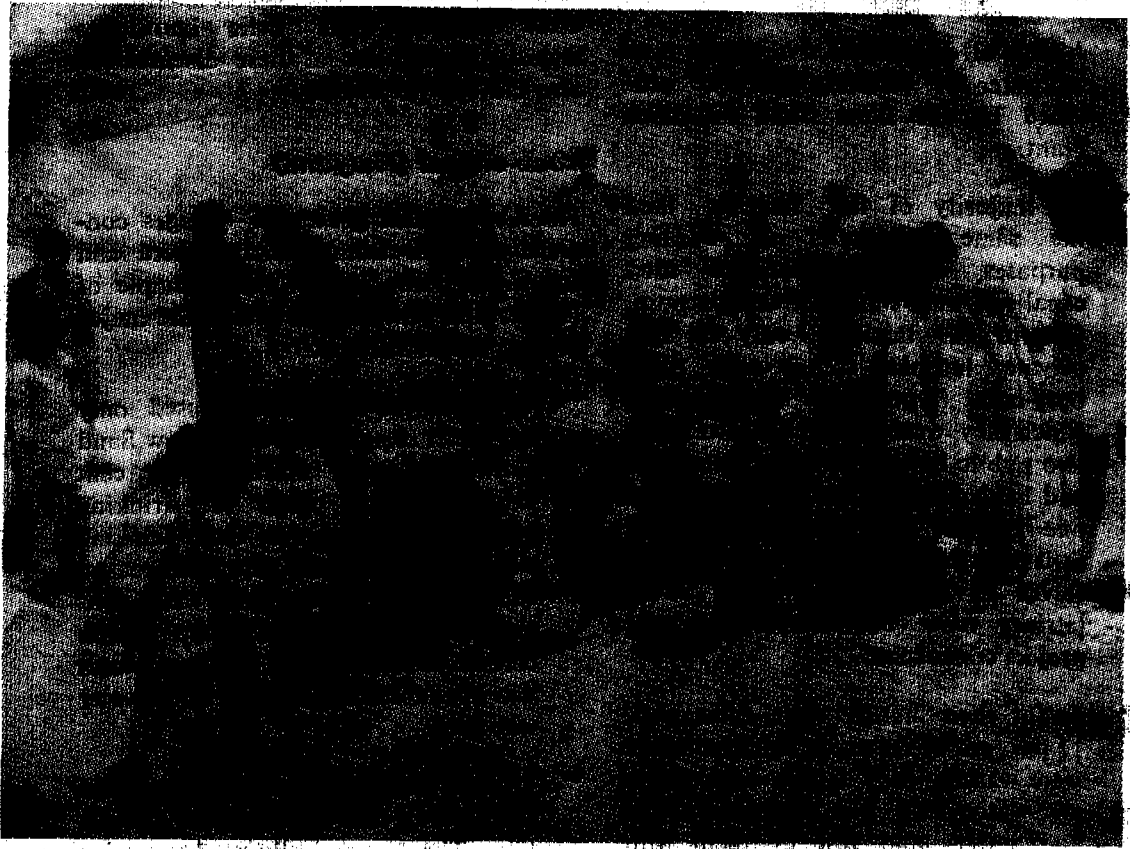
Abub-shahar (Haryana)

The Abub-shahar group of villages consisted of Abub-shahar, Sekata-Khera and Dhani Rajpura from which a sample of 250 persons were interviewed. The major findings are as follows:

* About 84 per cent families used only tap water supplied through Slow Sand Filtration Plant while 16 per cent were using canal water for drinking purpose. In the case of those drinking water from the canal, the main reason was reported that the tap water was available for limited hours; and on certain occasions when no tap water was available in home the canal water was used.

* Most of the people used soap or ash for washing their hands after defecation. The economically weaker section used earth for the purpose.

* Over 70 per cent of the respondents were aware of ill-effects of contaminated water. They knew that the diseases like diarrhoea, dysentery, cholera and gastroenteritis were caused by contaminated water. Twenty-five per cent mentioned that worm infestation was also caused by the contaminated water. Nearly seventy-five per cent respondents were able to mention signs and symptoms of these diseases though the knowledge about the correct causes was comparatively less. However 40 per cent were able to mention preventive measure and 70 per cent mentioned that these can be



Standpost for collecting water from a Public Stand-post

treated by allopathic medicines; some also mentioned indigenous treatment for these diseases.

* As for the disposal of the waste water was concerned, few soakage pits were constructed by the public health engineering department. About 140 families constructed individual soakage

pits while others still allow waste water in the lanes. As the quantity of the waste water was less as far as individual families were concerned, there was no major problem of water logging in these villages. Most of the families were disposing their solid wastes in the pits allotted to them by the village Panchayat.

Problems Faced and Learning Experiences

6.1. Problems

Certain problems were experienced which had direct bearing on the performance of the project. Some of these were as follows:

- * The budget for health education and community participation in the health phase of Slow Sand Filtration Project was released late and in bits. The restricted mobility of the health staff to monitor periodically the functioning of the project, especially educational aids which could not be developed in time due to small amount released initially. Even the overall allotment made to the States and other States for developing educational aids was very small.

- * Involvement of other health agencies

was sought from. Moreover selection of the Pilot Project sites was made by the public health engineering departments independent of the health departments of respective States. This facilitated the entry of the health staff in the project as somewhat separate entity.

- * The Public Engineers of the Public Health Department of all participating States were nominated on the Project Managing Committee for India. This facilitated to take decisions for effective implementation. As the Directors of Health Services were not involved in a way required, they were not fully aware of the progress of the Project activities in the States, resulting in indifferent attitude to the problems faced by the field staff.

- * In the village Pothunuru (Andhra Pradesh) the Sarpanch was opposed to the installation of the Slow Sand Filters. He believed that mechanical filters were better. It took quite some time to remove his misconception and to motivate to accept the Slow Sand Filtration Project. This delayed launching of the health education programme in the village.
- * Monitoring of the Project through joint field visits of the supervisory staff of the NEERI and the CHEB could not be possible. Therefore each Institute had to contact their counterparts in the States separately. It took much time to coordinate the activities of the two departments at district and at the village level.
- * In the Abub-shahar group of villages, the engineering department consulted neither the local health department staff nor community leaders in installing public stand posts to supply water. All the six water stand posts were installed at the peripheral boundary of the village. The villagers were not satisfied as they had to walk out to fetch water and they were not willing to cooperate in health education activities in the village. Similar was the case in Sekta Khera where the water-stand posts were provided at the village peripheral boundary, and quite a few were in front of the residence of the influential villagers; i.e., Panchayat members. No stand-post was installed inside the village where the residence of the opposition leaders were located. They were very much disgruntled and the health staff had a tough time in convincing them that the stand-posts were allotted according to the plan

and not as special favour to the party in power.

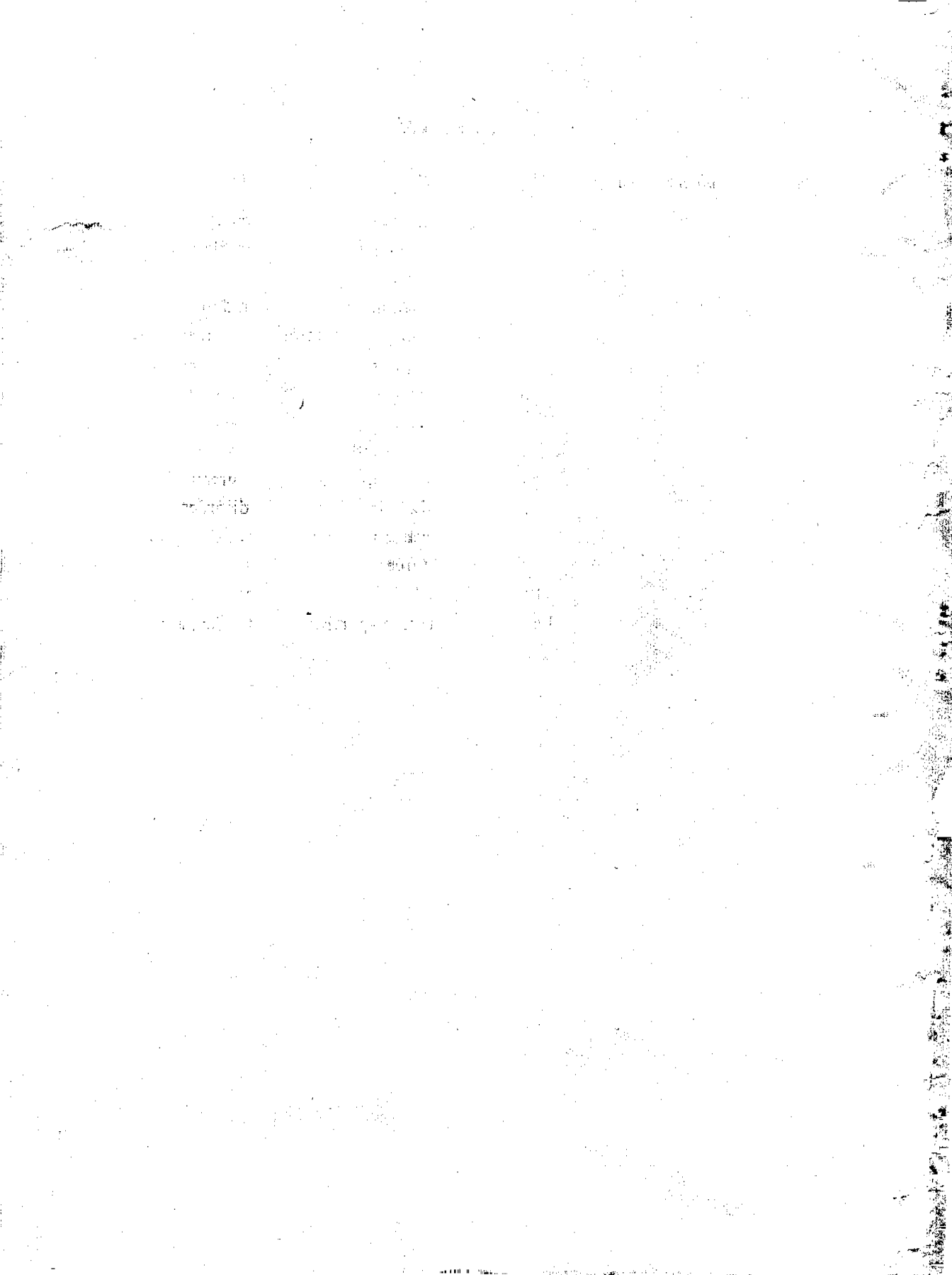
- * Another problem encountered was a frequent transfer of the local peripheral health staff. The trained staff were frequently transferred in some States.
- * Time for a supply of Slow Sand Filtration Plant was limited. It resulted in long queues and the long wait leading to frequent squabbles among the users and frictions among the community members.
- * The difficulty was experienced in collecting morbidity data on water-borne diseases, as the project villages were quite far away from the Primary Health Centres. Even after launching the project it was found difficult to collect such morbidity data regularly due to pre-occupation of the health staff.

6.2. Learning Experiences

- * The budget provision for health education and community participation must be adequate and be released in the beginning to facilitate proper planning and implementation.
- * The health authorities must be involved in these programmes right from the stage of planning so as to achieve their full participation and in various matters including selection of the village, etc.
- * All segments of the community must be involved (through their leaders) while selecting the village. The role expected from the community must be made clear. The site for Slow Sand Filtration Plant and the position of the water stand-posts in the village needs to be in consultation decided with the beneficiaries.

ERRATA

<i>Page</i>	<i>Column</i>	<i>Para</i>	<i>Line</i>	<i>Read</i>	<i>For</i>
ii			2	miles	mijes
2	2	3	2	minimal	minimum
3	1	2	2	well-knit	well-nit
3	1	3	2	malnutri	mulnutri
4	1	3	3	per cent of total	per cent total
4	2	2	2	schemes	scheme
7	1	1	3	process	passage
7	1	2	5	Bengal	Benga
8	2	4	1	improved	im roved
13	2	2	8	Bureau,	Bureau of
17	1	2	7	disorders	disordes
17	1	5	3	water was supplied	water supplied
18	1	3	1	three	two
18	2	1	10	condition	conditions
26	1	2	Last	teacher-parents	teachr-parents





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