



WHO  
International Reference Centre  
for  
Community Water Supply

The Hague, The Netherlands

# Annual Report 1978

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IRc Annual Report 1978

Established in 1968 at the Netherlands' National Institute for Water Supply in Voorburg (The Hague), the WHO International Reference Centre for Community Water Supply (IRC) is based on an agreement between the World Health Organization and the Netherlands Government. In close contact with WHO, the IRC operates as the nexus of a worldwide network of regional and national collaborating institutions, both in developing and industrialized countries.

The general objective of the IRC is to promote international cooperation in the field of community water supply.

Requests for information on the IRC, or enquiries on specific problems may be directed to the International Reference Centre for Community Water Supply, Information Section, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

A.K. Kober.

WHO INTERNATIONAL REFERENCE CENTRE  
FOR  
COMMUNITY WATER SUPPLY

ANNUAL REPORT 1978

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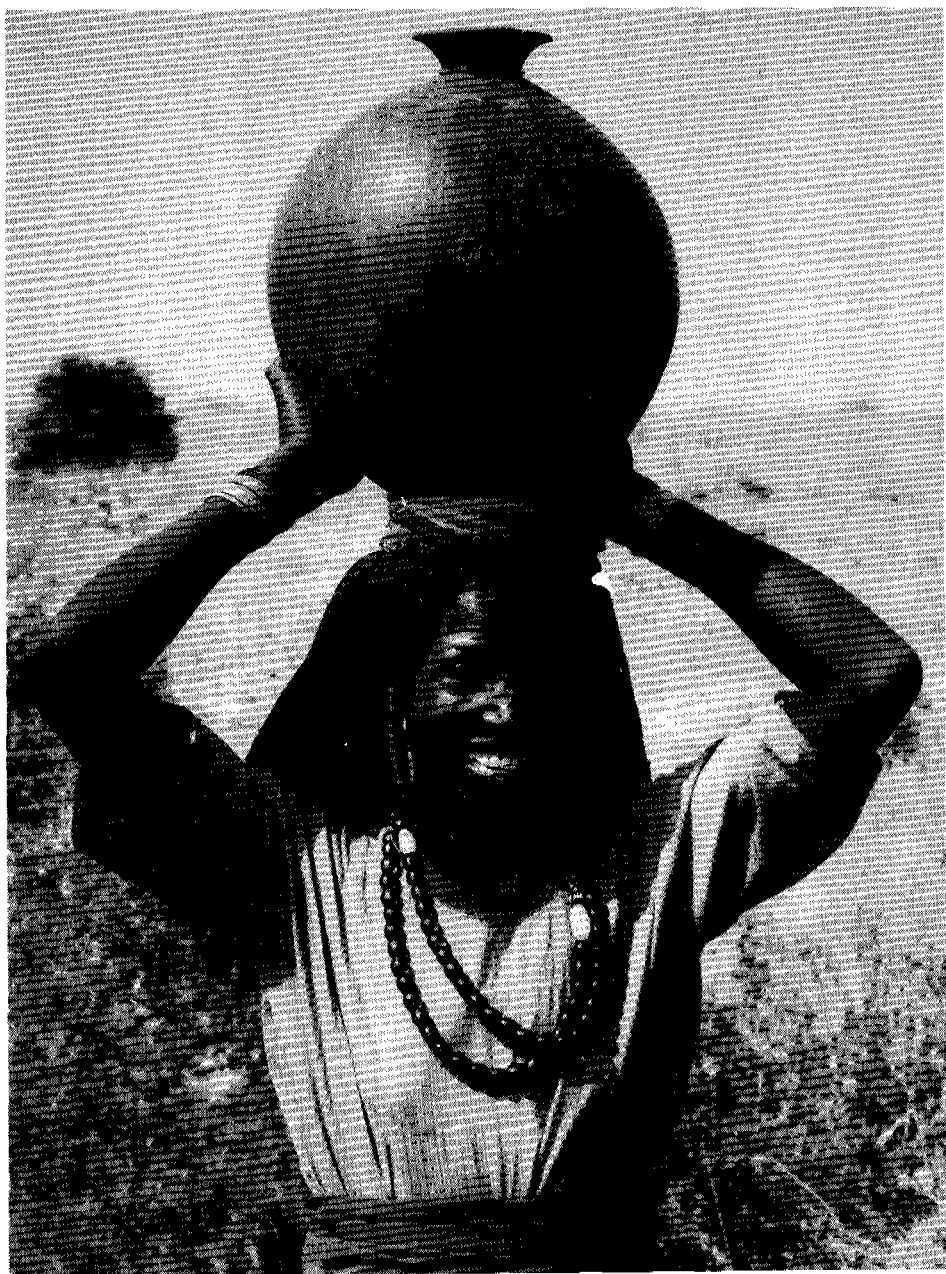
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## INTRODUCTION

In 1978, the WHO International Reference Centre for Community Water Supply celebrated its tenth anniversary.

Therefore, this Annual Report is of a different nature compared with previous years: a complete review of IRC's policies, programmes and projects will be presented, instead of a mere report on last year's activities.

Furthermore, as we are on the verge of the International Drinking Water Supply and Sanitation Decade, a substantial part of the report will be devoted to the preparations for this period. The Decade will probably be of crucial importance to the world's drinking water and sanitation situation, and to the activities of the International Reference Centre.

Before starting with this report, the staff of the WHO International Reference Centre for Community Water Supply wish to thank their friends and relations, all over the world, who "made it all possible . . . .".



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# 1. TEN YEARS OF IRC IN RETROSPECT

The International Reference Centre for Community Water Supply - IRC in short - was established in 1968 following an agreement between the World Health Organization (WHO) and the Netherlands Government.

Its activities were to include:

- o the development of criteria for the design and management of community water supply facilities, mainly in developing countries;
- o the provision of services for the comparison, evaluation, design and management of systems;
- o the evaluation of the appropriateness of new techniques and procedures, as developed by collaborating institutions;
- o the dissemination of research results;
- o the training of personnel.

In the first annual report of the IRC already, modifications of this delineation of tasks were published, something that was to happen more often in later years. This indicates, that the IRC "had to find its way", as an international conference in Dubrovnik called it at the time.

## THE PROBLEM

There has been little proportional improvement since the early seventies, when only 70 per cent of the population of cities in developing countries



had access to a reasonable drinking water supply. In rural areas, the situation was less acceptable: there, the average percentage hardly reached 15. In total, about 1,300 million people had no reasonable water supply, while the sanitary situation was even worse.

The results were a poor health condition of the population in general, difficulties in health control, a high mortality rate, etc. In this way, much labour potential and other possibilities for development were lost, which is one reason for a hampered agricultural and industrial development.

It was becoming more and more evident, that water supply and sanitation were among the key components of integrated rural development.

Several international conferences discussed targets to be met in the field of water supply and sanitation.

As early as in the 1961 Punta del Este Declaration, the governments of Latin American countries formulated as a target, that in the period 1968-1971 70 per cent of their urban population should be provided with adequate water supply and sanitary facilities.

The Second Development Decade (1970-1980) of the United Nations aimed at the provision of water supply for all urban dwellers - either by house connections or by public standposts - and for 25 per cent (adjusted in 1975 to 36 per cent) of the people in rural areas.

In 1976 the United Nations Habitat conference recommended countries to "adopt programmes with realistic standards for quality and quantity to

provide water to all people in urban and rural areas by 1990, if possible" and to "adopt and accelerate programmes for sanitary disposal of excreta and waste in urban and rural areas". The United Nations Water Conference (1977) explicitly confirmed these recommendations and proposed the decennium 1981-1990 "The International Drinking Water and Sanitation Decade", in order to stimulate national and international efforts to meet the above mentioned targets.

### **TERMS OF REFERENCE OF THE IRC**

One of the key problems in developing countries is that there is a lack of experience and knowledge on planning, design, management, operation and maintenance of community water supply and sanitation facilities.

Against this background, the IRC has chosen as its terms of reference the development of activities, aiming at the implementation and improvement of water supply and sanitation systems, by means of international cooperation. Special attention is given to the solution of structural and fundamental problems in the field of water supply and sanitation and related subjects, mainly by promoting the exchange and transfer of technical and scientific knowledge and experiences.



## 2. IRC AND THE INTERNATIONAL DRINKING WATER SUPPLY AND SANITATION DECADE

Since the United Nations Water Conference proposed to establish the International Drinking Water Supply and Sanitation Decade (1981-1990), a number of preparatory activities have taken place.

One of them is, that those organizations within the United Nations which are concerned with community water supply and sanitation development <sup>\*/</sup> have agreed on a joint approach to promote all Decade activities.

They have set up a Steering Committee, consisting of representatives of the various organizations, to initiate the necessary actions. Activities at country level are to be emphasised, and the UNDP resident representatives will be the focal points in the developing countries for technical co-operative activities of the organizations involved.

In November 1978, a Consultative Meeting on Drinking Water Supply and Sanitation was held. Participants in this meeting were UN organizations, bilateral agencies and regional banks. Views were exchanged on strategies for mobilizing resources for the Decade, and on how best to conduct consultations, and continue cooperation between the relevant UN and other organizations, bilateral agencies and participating governments.

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<sup>\*/</sup> United Nations, UNICEF, UNDP, ILO, FAO, WHO and World Bank.

In this meeting, the critical importance of water supply and sanitation for socio-economic development in developing countries was underlined. Willingness was expressed for increased cooperation with governments wishing to attain the targets of the Decade, in accordance with their national priorities.

Agreements were reached on various points of a more technical nature, such as the desirability of increased efforts in the formulation of plans, the crucial importance of appropriate technology and the need to pay more attention to maintenance problems and personnel training.

Technical Cooperation among Developing Countries was recognized as essential in these matters.

A related activity was the launching of a rapid assessment exercise in all developing countries by the World Health Organization, in cooperation with the World Bank. This entailed a country-by-country review, to observe the state-of-the-art in the drinking water and excreta disposal sector, and to devise measures which could bring national programmes into line with the goals of the Decade.

The conclusion was that during the preparations for the Decade, international cooperation in the formulation of plans and the development of projects and manpower potential should be strongly stressed.

## **TECHNOLOGY SUPPORT AND INFORMATION**

In November 1978 preparatory activities for the Decade included consultations between some regional and international agencies during a meeting jointly organized in the United Kingdom by the WHO, the Water Research Centre (U.K.) and the IRC.

The meeting reviewed the major obstacles to progress calling for action during the Decade. One of these obstacles is, that operating agencies lack back-up activities, ranging from community motivation to programme and project evaluation and information systems development.

The meeting considered the availability of technology information of prime importance to the Decade. Programme formulation and the preparation and implementation of projects are hampered by a lack of technical, financial, sociological and operational data, methodologies and institutional arrangements.

It is relevant to mention once more the concept of Technical Cooperation among Developing Countries (TCDC), involving the creation of communication and/or promotion of closer and more effective cooperation among developing countries. "It is a vital force for initiating, designing, organizing and promoting cooperation among these countries, so that they can create, acquire, transfer and share knowledge and experiences for their mutual benefit and in order to achieve national and collective self-reliance, which are essential for their social and economic development".<sup>\*/</sup>

This means that each country needs a mechanism for the collection, transfer and exchange of information, knowledge, experience and technology - both hardware and software - from within the country and from external sources. Most of the developing countries lack this vital instrument.

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<sup>\*/</sup> *Report of the UN Conference on Technical Cooperation among Developing Countries, part 1, Buenos Aires (1978) (Doc. A/CONF. 79/3)*

It would be an important contribution to the success of the Decade if national governments were to establish national centres and linkages with all support activities, in order to strengthen the operating agencies active within the country. These mechanisms would also have to be linked at regional and international level, to help organizing and developing other national centres,



WHO-photograph by I. Guest

to facilitate the information flow among them,  
and to locate resources in industrially advanced  
countries to supplement regional or national  
expertise and facilities.

During the Decade, the IRC will especially aim  
its programmes at finding solutions to these  
problems.





IRC-photograph

### 3. IRC'S PROGRAMME APPROACH

In general terms, the following phases of development can be discerned in the programmes of the International Reference Centre:

(a.) *inventories.*

It is impossible to start the development of a programme without having inventorized the existing knowledge and experience at global level, for instance by way of regional and international seminars/workshops, literature research, evaluations of projects set up earlier, etc.

(b.) *analysis.*

The gathered material has to be analysed. This allows for an identification of knowledge gaps.

(c.) *research.*

Applied research is a step, which follows logically. The research is limited to the identified gaps, and preferably takes place in one or more developing countries.

The results of phases (a.), (b.) and (c.) enable the formulation of a

(d.) *hypothesis:*

a tentative programme, based on an approach, which is at least theoretically appropriate.

(e.) *testing/transfer.*

Before starting an extensive implementation of the programme, it will be necessary to

test the hypothesis in practice; this can lead, again, to a need for supplementary research and an identification of unexpected gaps. On the other hand, it may be useful to start a certain information transfer now: the dissemination of the results of the phases (a.), (b.) and (c.) could be important to other organizations planning programmes in developing countries; besides, this dissemination may evoke highly useful comments.



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(f.) *synthesis.*

The combination of hypothesis, test results, initial research, and comments received, will lead to the formulation of a synthesis, of which the validity has been tested in practice. This synthesis is published in the form of guidelines, technical manuals, and standard designs.

(g.) *implementation.*

Finally, the material can be disseminated and used for training and practical application.

To complete the overall picture of IRC's programmes we must add two points.

Firstly, the construction of facilities and the development of public works should be accompanied by efforts to realise some infrastructural improvements, so that these facilities will not only be constructed, but maintained as well.

Secondly, it should be understood, that national problems in developing countries will never be solved by international collaboration alone. The development of national capacities is of central interest if, in the end, a situation of "*self-reliance*" is to be reached.



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## 4. IRC'S PROGRAMMES AND PROJECTS

On the following pages, the programmes and projects of the International Reference Centre will be described <sup>\*</sup>/.

In general, the following programme areas can be distinguished:

- (1.) infrastructural and institutional facilities for community water supply and sanitation;
- (2.) programme and project management and evaluation;
- (3.) education and training of personnel;
- (4.) development and application of appropriate technology;
- (5.) social development/education and involvement of population;
- (6.) information and research coordination.

In most of the programmes, technical subjects serve as a "vehicle" for an integrated development of the technological, organizational and sociological components of the various programmes. This means, that a variety of aspects is taken into account, such as planning, operation and maintenance, financial arrangements and administration, organization and management, as well as various institutional, infrastructural and sociological aspects, such as manpower develop-

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<sup>\*</sup>/ with the exception of programmes completed before 1978.

ment and community participation. All these elements are complementary and just as important as the technological component of water supply and sanitation programmes.

To demonstrate this approach, a series of integrated demonstration projects is being developed. Basic items of interest, such as hand pumps, slow sand filtration, public standposts, well construction, simple pre-treatment methods and pipe network design are used to show the importance of integrated programme development in accelerating improvements in the community water supply and sanitation field.

### **APPROPRIATE TECHNOLOGY**

The Water Conference rightly recommends that appropriate technologies be developed to comply with the Decade targets, i.e. to supply everyone with water and sanitation facilities by the end of the eighties. Such techniques should be readily available, affordable and should lead to well maintained facilities in the communities.

Adaptation, evaluation and generation of such techniques can best be accomplished under local conditions, in national centres.

In support of these activities the IRC Mail Survey on Practical Solutions in Drinking Water Supply and Wastes Disposal for Developing Countries collects relevant techniques, often locally adapted to meet the prevalent shortage of resources.

The recurrent requests for and contributions to the collection of these alternative techniques warrant the publication of a second revised

edition, for which a consultant has been approached. Use of local materials and equipment would decrease the dependance on imports, and secure a more continuous supply. In cooperation with the Technical Universities of Delft (The Netherlands) and Bandung (Indonesia), a study was initiated to develop simple processes for the preparation of basic chemicals for disinfection and coagulation. Following a survey of the patent and general literature, the process of on-site generation of hypochlorite will be investigated and field tested.

A major World Bank research study identifies sewerless systems as an attractive alternative to costly sewered waste disposal.

A measure of the appropriateness of basic sanitation facilities is their general acceptance and use in rural and urban fringe communities and the ease with which they are maintained. This gives an extra social dimension to the technology required, i.e. the necessary acceptance and involvement of the community in planning and choice.

Further orientation in the field of waste treatment and disposal indicates the potential for a study on the introduction of a comprehensive sanitation package as a vehicle for community development. Identification of the various components and a data base collection is in progress.

To provide the thousands of villages in a country with sanitation facilities, an organizational and administrative approach has been demonstrated (e.g. in several Latin American countries) in which the engineering was simplified by the



use of standard designs. In such a system engineers' aides trained in brief courses can play a substantial role, thus reducing the need for engineering skill, which is a scarce commodity. To assist rural water agencies in making standard designs, a manual will be produced on type designs of engineering components which have been put to practice in many countries.

In the year under review preparatory work was done, and information was collected, mainly by mail. In an exploratory mission to Brazil, Peru, Mexico and Washington D.C., collaborative contacts were made, sources of information identified, and the special cooperation was secured of the Pan American Health Organization and the Pan American Centre for Sanitary Engineering and Environmental Sciences (CEPIS).

#### **HAND PUMPS FOR WATER SUPPLY USE**

There is a growing awareness of the important role hand pumps will play in providing water supplies to rural areas of developing countries. Several hundred million people already depend on hand pump operated drinking water supplies. Major hand pump programmes are underway or planned in many countries.

However, experience shows that the use of hand pumps in community water supplies presents serious problems of design and selection, maintenance practice, quality of manufacture, and administrative organization of programmes. These problems have a worldwide dimension, as they are encountered in all countries where hand pumps are used on a large scale.

In 1976, the IRC initiated a programme on hand pumps for water supply use, with an emphasis on the needs of rural communities. The programme is carried out under the auspices of the World Health Organization and has received financial support from the UN Environment Programme. It aims at collecting and disseminating selected



*IRC-photograph*

information, and demonstrating suitable methods and approaches in support of hand pump research and development, rural water supply projects, water supply programme planning, education and training.

During 1978, the IRC continued the systematic development of technology, methods and guidelines for design, maintenance and manufacture, to support the hand pump programmes of many developing countries.

The Panamerican Centre for Sanitary Engineering and Environmental Sciences, CEPIS (Lima, Peru) - on the request of and with financial support from the IRC - prepared and published a Spanish version of the IRC Technical Paper No. 10 "Hand Pumps". Entitled "Bombas de Mano", this handbook was distributed and well received in Latin America. The IRC has pleasure in putting on record its appreciation for the excellent work done by CEPIS in bringing this IRC publication to the Spanish speaking countries.

The handbook was also translated into French, at the Institut du Génie de l'Environnement at the Ecole Polytechnique (Lausanne, Switzerland). The IRC gratefully acknowledges the very good work done by the Institut du Génie.

Preparations for the finalization and publication of the French version are being undertaken.

The IRC arranged for F.E. McJunkin to write a "methods document" on field trials of hand pumps, and worked on a hand pump testing manual in collaboration with the Consumers' Association Harpenden Rise Laboratory (United Kingdom).

From 13th - 16th November, a Workshop on Hand

Pump Evaluation and Testing was held in Voorburg (The Hague). Attended by 12 experts, this useful meeting reviewed the information available from hand pump testing projects and other sources of expertise. The material and insights resulting from the Workshop are being laid down in guidelines and methods documents. Liaison is maintained with such organizations as the Office of International Programs, Georgia Institute of Technology (U.S.A.), the CIDA-assisted Upper Region Water Supply Project (Ghana), and the West Java Rural Water Supply Project (Indonesia).

In 1978, further attention was paid to the organizational set-up for hand pump maintenance. Many water supply programmes with hand pumps will need an improved maintenance system, if the impact of the programme is to continue. Possibilities were explored to promote and support the indigenous manufacture of hand pumps, so as to limit import requirements.

### **PUBLIC STANDPOST WATER SUPPLIES**

Public standposts may be regarded as an intermediate step in the development of full house connected water supplies. However, for many people in a large number of countries, a public standpost water supply could well be the only feasible system for a long time to come. This is particularly true of rural areas, where scattered housing makes individual connections very expensive, due to long runs of pipe required, and in low income urban fringe areas, where little revenue can be expected in return for public services.

The major objective of the current standpost programme is to promote and to support the

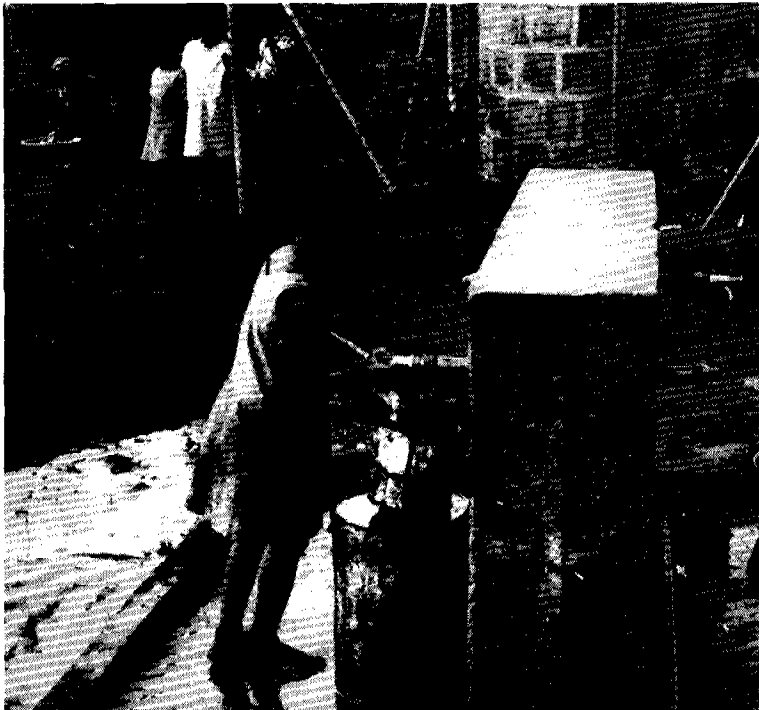
integrated development of water supply programmes which include public standposts. Much attention is being given to the institutional, organizational, financial, socio-cultural and technological aspects; and in particular, to the improvement of planning, design, operation, maintenance and management.

The first phase of the programme was started as a study for the World Bank. Its purpose was the identification of the major problems and constraints with respect to the planning and construction of public standpost water supplies. A series of country studies has been carried out and an international expert meeting was organized to review their preliminary results. A comprehensive report has been prepared, dealing with the various economic, organizational, socio-cultural and technological aspects and their inter-relationships. This publication provides basic information to policy makers, planners and chief engineers.

In addition, a Manual on Design and Construction is being prepared including design criteria, calculation models and standard designs; to provide guidance to design engineers, drawing office personnel and construction supervising staff. A Manual on Organization and Management is also in preparation. It is to cover planning, financing and organization, particularly with respect to operation and maintenance of public standpost water supplies in developing countries. This publication is directed to planners, managers and administrators. It is anticipated that the above documents will be published in the course of 1979.

In 1978 the second phase of the programme was started. In international as well as regional collaboration, a series of integrated research and demonstration projects on combined public standposts and house-connected water supply systems was set up.

A number of public standpost water supplies are to be installed in selected countries. In accordance with the integrated programme development concept, various institutional, organizational, managerial, technological, financial, socio-economic and cultural aspects are taken into account. In the development of these programmes, special emphasis is laid on operational and maintenance aspects and on an integrated approach towards the various aspects involved.



*IRC-photograph*

The demonstration projects are planned in rural and in urban areas, and are carried out by national agencies as part of their national water supply programmes. The major part of this work is carried out by local staff, who have the direct responsibility for the development in their respective programmes. These programmes are to demonstrate an appropriate methodology for the planning and implementation of public stand-post water supply programmes, adapted to local circumstances.

The projects will be set up in each of the following regions: South-East Asia, East Africa, West Africa, the Middle East, Latin and Middle America and the Caribbean. Preliminary consultations on participation have been started with the following countries: Columbia, Ghana, India, Indonesia, Jamaica, Kenya, Malawi, Malaysia, Mexico, Tanzania, Thailand, Peru, the Philippines and Zambia. A proposal for collaboration on programmes is in preparation.

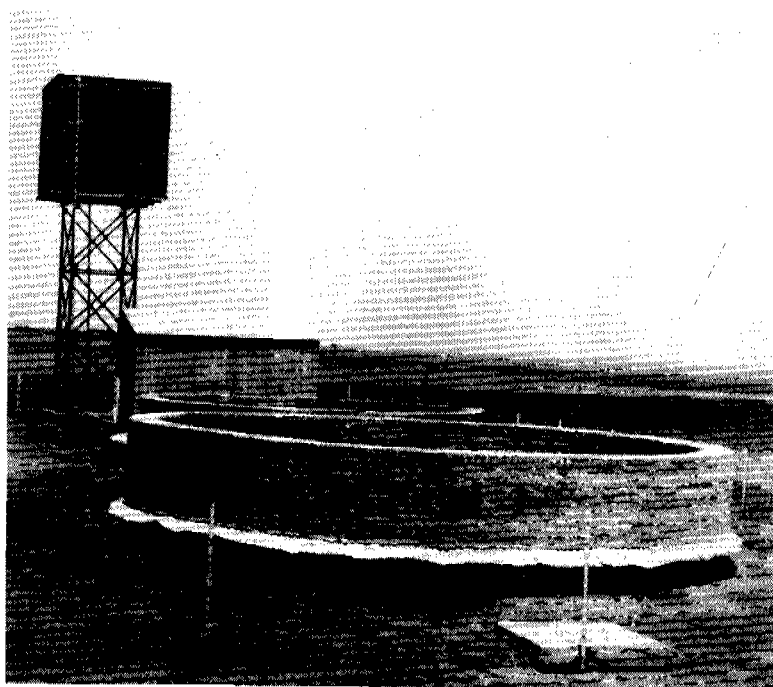
The integrated demonstration projects are supplemented with a series of special subject studies on planning, design and construction, administration and finance (revolving funds, revenue collection), organization and maintenance, training of management and operation staff, local manufacture of parts and equipment, socio-cultural aspects, community participation, sanitation education and public information. Attention is also being given to network design and the use of plastic pipes and parts in low-cost water distribution systems.

Possibilities are being investigated for international collaboration with, inter alia, the

World Bank, WHO, UNIDO, UNDP and various bilateral development assistance organizations.

### **SLOW SAND FILTRATION**

In the coming years many central water supply systems will be built in urban fringe and rural areas. Often surface water will have to be used, and hence there is a need for adequate, but low-cost and simple treatment techniques. Slow sand filtration is such an appropriate treatment technique. It merits a much wider application for community water supply than presently is the case. In order to promote this large scale application, a number of developing countries are engaged in an integrated research and demonstration project on slow sand filtration, in close collaboration with the IRC.



*IRC-photograph*



The project consists of the following phases:

1. Development of applied research programmes in international collaboration by a core group of participating institutions.
2. Coordinated development of demonstration programmes by the participating countries.
3. Transfer of information to and demonstration activities for other developing countries, by the countries that participated in the first two phases.
4. Preparation of large scale slow sand filtration programmes by several other developing countries, based on the results of the preceding phases.

In the period from 1975 to 1977, the applied research programmes for phase I have been implemented by a core group of five countries, viz. Ghana, India, Kenya, Sudan and Thailand. The phase I programmes consisted of applied research on slow sand filtration pilot installations, field investigations, literature studies and preparatory organizational activities for phase 2.

In phase II, which spans the period from 1977 to 1980, the core group is joined by Columbia and Jamaica. The objective of these country programmes for phase 2 is to test and demonstrate various alternative implementation strategies in practice, under different conditions.

The objective therefore has the following main elements:

1. The development, testing and evaluation of various implementation strategies for slow sand filtration projects at local level, by the implementation of a number of local

demonstration projects (two to four per country) in selected villages (1,500 - 10,000 inhabitants).

2. The development, testing and evaluation, - at national and local level -, of models for the organizational and institutional infrastructure required for the repetition of these projects within the scope of large scale implementation programmes.

The planning, implementation and evaluation of the programmes are carried out in and by the participating countries themselves. The general responsibility for the programme in each country lies with a Programme Managing Committee, in which the various disciplines and agencies involved in the programme are represented. This specifically concerns:

- water supply agencies at national and regional level;
- health service agencies at national and regional level (including health education);
- community development agencies at national and regional level;
- national research and development institutes in the field of public health and environmental engineering.

In each country one of the Agencies performs the function of Programme Coordinating Institution (see table 1).

During 1978 emphasis was laid on the detailed design and development of the local demonstration projects. By way of preparation, various consultations and meetings were held between the participating agencies at national and local level in each country, to create mutual understanding and commitment to the basic approaches and imp-

lementation strategies of the projects. Since community participation forms a central feature of the slow sand filtration project, the inhabitants of the demonstration villages were involved in these consultations to the largest extent possible.

As a result, detailed proposals evolving the objectives, methodology, evaluation procedures, time phasing, resource allocation, etc. were compiled for the projects. These proposals in turn formed the basis for the Letters of Agreement which have been exchanged with the participating countries in the course of 1978.

*Table 1 - countries participating in the slow sand filtration project.*

COUNTRY	PROGRAMME COORDINATING INSTITUTION
Columbia	Instituto Nacional de Salud
Ghana	Ghana Water and Sewerage Corporation
India	National Environmental Engineering Research Institute
Jamaica	National Water Authority
Kenya	Public Health Department, Ministry of Health
Sudan	Rural Water Corporation
Thailand	Rural Water Supply Division, Ministry of Public Health

In the year under review, good progress was made in the participating countries with the design and construction of slow sand filtration demonst-

ration plants (the first water supplies will be taken into service in February 1979). Various types of slow sand filters have been constructed including circular and rectangular masonry filters, circular and rectangular reinforced concrete filters, circular ferro cement filters and protected sloping wall filters.

In order to support the participating agencies, and on the basis of the result of the programmes of phase 1, a manual for design and construction of these types of small slow sand filtration schemes was prepared, comprising inter alia a step by step description of the design procedures and methods on the basis of a design example, construction specifications of elements of slow sand filtration plants, a number of typical designs including construction drawings and bills of quantities (IRC Technical Paper No. 11, December 1978).

A companion document on operation and maintenance of small slow sand filtration plants was under preparation by the end of 1978 and will be published in the course of 1979.

From 29th May to 2nd June, 1978, an international meeting on "Community Education and Participation in the Slow Sand Filtration Project" was held in Voorburg (The Hague).

The meeting was attended by representatives of National Health Service Agencies from countries participating in the project, which are responsible for the Community Education and Participation Component of the respective country programmes.

The purpose of the meeting was to enable the participants to become acquainted with one

another's programmes and to effect the greatest possible harmonization of the programmes, while recognizing the fact that each country has its own socio-cultural and economic conditions and organizational structures, to which the country programmes have to be adapted.

On request a report of the meeting is available.

In order to provide organizational and programmatic assistance for the project, missions were undertaken by IRC staff to Columbia, India, Jamaica, Kenya, Sudan and Thailand.

In 1978, the operational relations with various international and bilateral organizations were further strengthened, with short missions to Canada, the United Kingdom, U.S.A. and Switzerland.

## **EVALUATION FOR VILLAGE WATER SUPPLY**

The investments in water supply schemes planned for the next Decade exceed those made in the last Decade several times. If the present momentum is to be maintained, the lessons of experience have to be rapidly digested and applied. Accordingly, the assistance provided to the Ross Institute (part of the London School of Hygiene and Tropical Medicine) in compiling a handbook on Evaluation for Village Water Supply Planning was continued. A draft version of the handbook was sent to a selected group of experts for review, and publication is planned for 1979.

The handbook is intended to stimulate the execution of evaluations according to a proposed standardized method, in order to permit comparison between different programmes and to

provide an opportunity for drawing general conclusions. Experience gained in the past will serve as the basis for better planning in future programmes and systems.

More specifically, the handbook was written with three major objectives in mind. The main objective is to convince decision makers that before rehabilitating substandard supplies and using scarce resources to construct and operate new supplies, it is worthwhile studying existing schemes from the perspectives set out in the handbook. The second objective is to convince the specialist health workers, engineers, economists, administrators and others, that they need to use each other's skills if maximum progress is to be made. The third objective is to assist in the preparation and execution of an appropriate evaluation programme, and to give support to those who want to obtain the necessary data to carry out an evaluation.

## **MANPOWER DEVELOPMENT**

In 1978 various activities in the field of training and manpower development were continued or started.

First of all the document "Suggested Steps for Development of a National Training Delivery System" was elaborated. Towards the end of the year the third draft of the document was issued in two volumes. Each volume presents a concept for the development of a Training Delivery System for the water supply and sanitation sector in developing countries. One was originally compiled by Eng. N.F. Carefoot of the Pan American Health Organization, the other was developed by

J.K. Densham of the Industrial Training Service in the United Kingdom. Although there is a lot of similarity in the authors' concept, it was considered valuable to present them both, as they contain a considerable amount of complementary information.

The IRC Manpower Development Programme, which aims at establishing national structures for the development of human resources for the water and sanitation sector in a limited number of developing countries, has assumed a more definite shape.

The Caribbean Basin Water Mangement Project (AMRO-2174) was officially designated a demonstration project within the collaborative IRC Manpower Development Programme by the Pan American Health Organization.

In October 1978 an instructors' manual and planning guide for "Training of Trainers" was issued by the Caribbean project team, based on experience gained during the first phase of this project.

The IRC Manpower Development Programme also strengthened its contacts with countries like Indonesia, the Philippines, Sri Lanka, Tanzania and Ghana. These countries, each developing their own National Training Delivery System, could mutually profit by sharing experiences, training materials and expertise.

Consultancies were provided with regard to training system development for urban and rural water supply in Indonesia, and for rural water supply training in the Philippines.

The training seminars organized in 1976 in Amsterdam by the IRC and in 1977 in Tadley Court,

United Kingdom, by the National Water Council and the IRC jointly, have led to organizations in Venezuela and Brazil setting up seminars for the American and Caribbean areas respectively on training for rural and urban water supply. Both seminars are planned to take place during 1979, the one for rural water supply training in Merida, Venezuela on the premises of the Centro Interamericano de Desarrollo Integral de Aguas y Terras (CIDIAT), the other one for urban water supply training in Rio de Janeiro, Brazil. Consultations are going on with Tanzanian officials to organize a similar seminar for the East African Region.

During the International Water Supply Association Congress in Kyoto, Japan, a paper was presented on "Special training problems for rural water supply in developing countries", prepared by J. Haijken and R.P.J. Turrell (NWC). It dealt with some successful approaches to training development used in Latin America, with possible strategies towards the development of training systems in rural areas.

The IRC considers setting up a system of correspondence courses for developing countries on various water and sanitation subjects. Discussions are going on with CETESB in Brazil, which has extensive experience in this kind of training.



## COMMUNITY PARTICIPATION

In the last few years, together with the shift in emphasis from urban to rural community water supply and sanitation development, there has been a growing discernment of the entirely different characteristics of both settings, requiring diverse approaches in planning and programming basic sanitary services.

In this respect one of the key factors in rural programmes is often referred to as community participation.

Although community participation may have different meanings in various situations and to different people, it generally emphasizes the mobilization of community resources by methods of dialogue, participation, consultation and community control and the provision of support to the community, based on "felt needs" and directed towards developing self-reliance.

Notwithstanding the consensus of opinion regarding the crucial role that community participation plays in rural water supply and sanitation, at present functional information and directions as to how to incorporate community participation in programmes, are rather limited. One factor that adds to this situation is, that successful community participation methods depend so closely on the local social-economic setting and national organizational and political framework, that no single ideal model exists.

At the same time, however, Latin American experiences show, that community participation strategies, if they are to be successfully

carried out on a large scale (as a routine part of a national programme) must be spelt out in considerable detail.

Hence, what is needed in most developing countries is the designing of community participation components of community water supply and sanitation programmes at national level, and their employment in a series of pilot projects. In the course of 1977, the IRC commenced an orientation study to identify potential processes of international support and regional training to stimulate and strengthen these developments.

The orientation study, which was also carried out during the year under review, basically comprised two major activities:

1. an appraisal study on the relevance, need and feasibility of an action plan on community participation in water supply and sanitation in developing countries;
2. a literature study on community participation.

In addition, information was obtained from local demonstration projects, carried out within integrated research and demonstration project on slow sand filtration. As reported elsewhere (p. 40) community participation forms an important component in these local demonstration projects.

On the whole, the appraisal study revealed that there are three major needs for information among development agency personnel, both at national and international level. These are data on:

- "who is doing what", particularly in the field of evaluation of community participation; what methods are being used and what are the findings;

- "what is known", on community participation methods, or a request for a documented synthesis of what is presently known or hypothesized about community participation methods;
- "how to do it", obviously the most difficult and neglected question, but nevertheless the most urgent need to be satisfied before more community participation can be incorporated in national programmes.

To fulfill the above mentioned needs, a draft action plan has been designed, comprising a series of interrelated activities at national, regional and global level, ultimately leading to the introduction of appropriate methods of community participation into national water and sanitation programmes.

The draft action plan will form the basic tool for consultation with national agencies, the international community and donor countries, regarding the joint and coordinated set-up and development of specific studies, training activities, action research and demonstration projects.

A literature study, which was started by the end of 1977, has been continued in 1978, to provide a basis for, and to make a start with the compilation and synthesis of documentary material, available on the role of community participation in the success and failure of water and sanitation projects. By the end of the year under review an "Interim Bibliography on Community Participation in Water Supply and Sanitation" was compiled, comprising both a literature review (part I) and a series of selected and annotated references

(part II). In part I a first attempt has been made to synthesize the available documented information on community participation. The paper concentrates on programme planning and implementation at local level, but also discusses "higher level support" for the community, as well as planning for community participation at national level. In order to increase the accessibility of the existing studies and documentation, most of the literature discussed in the review (part I) has been added as a separate bibliography (part II), containing comprehensive abstracts. A number of keywords and authors has been added as well.



WHO-photograph by L. Orihuela

## 5. INFORMATION

Since its establishment, the International Reference Centre has tried to contribute to the improvement of the exchange and transfer of relevant information, both within the programmes and projects described in earlier chapters, and by performing request handling services, wherever possible.

This chapter offers a review of these and other aspects of IRC's information activities.

### **PROGRAMME ON EXCHANGE AND TRANSFER OF INFORMATION**

In 1977, one of the recommendations of the United Nations Water Conference concerning information was that "an effective clearing house mechanism should be developed through international co-operation, by strengthening existing mechanisms if available, at national, regional and international levels, to provide for the communication of selected information concerning all elements of community water supply and sanitation. An inter-related communication function should be included at every stage in all community water supply and sanitation projects". An IRC-project called "Programme on Exchange and Transfer of Information (POETRI) on community water supply and sanitation in developing countries", has this object in view.

POETRI aims at filling structural gaps in the field of information exchange. To this end contacts are being established in a number of developing countries with institutes which preferably, have already acquired a central position in the field of water supply and sanitation within their respective countries, and which have a certain experience in information handling. Per region (West Africa, East Africa, South-East Asia, etc.) these institutes - termed National Focal Points (NFP's) - will form a mechanism of collaborating centres, supported by Regional Focal Points (RFP's) and/or the IRC.

At national level, the NFP's will collect and analyse the knowledge and experience available within their respective countries. Furthermore, they will have to establish ways and means of making the resulting information available to potential users.

At international level, they will handle requests for information and documentation from other countries, often made by or through fellow-NFP's.

IRC's task will consist mainly of the development of a basic structure for this exchange mechanism, and of providing guidelines for request and information handling at the various centres.

As soon as possible, all Focal Points will be provided with a "standard library" consisting of relevant publications on community water supply and sanitation. Extension of the distribution to other (sub-)organizations active in the water field is under consideration.

In cooperation with the Focal Points, bibliographies on various aspects of the sector will be compiled, as well as regional and national inventories of the existing sources of information, such as water organizations, relevant government bodies, research institutes and information bases in adjacent fields (public health, agriculture, etc.).

Thus it can be expected that - at the beginning of the International Drinking Water Supply and Sanitation Decade - a considerable number of developing countries will be assured of the availability of relevant knowledge and experience, to support the efficient and effective preparation and implementation of drinking water supply and sanitation projects.

### **NEWSLETTER**

Close on one hundred editions have been published of the IRC Newsletter since 1970. The English and French versions are made at the IRC, while a Spanish version is prepared and distributed by CEPIS.

This monthly newsletter, whose distribution has grown to 15,000 copies, provides information on new developments in the sector, data on new publications and forthcoming courses, conferences, symposia, exhibitions, as well as IRC-news. An interesting development is the growing number of contributions by Newsletter readers, who submit conference announcements, new books for review and interesting news items and suggestions to the editors.



## LIBRARY AND DOCUMENTATION

One of the main functions of the IRC Library and Documentation Unit is to anticipate possible future activities of the Centre. In 1978 much attention was paid to the collection of material on sanitation, as it is expected that the activities in this field will be extended. This emphasis on sanitation will be continued in 1979.

Another function of the Unit is to support the Centre's current programme and project activities. The extensive library holdings on the subjects mentioned in this report have been kept up-to-date. Mention should be made here of the enormous amount of material collected in connection with the literature survey on community participation in community water supply and sanitation.

An important criteria for collecting material is availability: the collection of unpublished and normally inaccessible material has priority.

IRC Library holdings are being extended at a very fast rate <sup>\*/</sup>. At the moment the IRC Library contains approximately 5,000 documents. It is expected that this number will be doubled within 1½ years. The Centre also regularly receives approximately 140 journals and newsletters.

Journal articles, conference papers, etc., as well as relevant book material, are made retrievable by means of a semi-automatic documentation system (a peek-a-boo system). This was

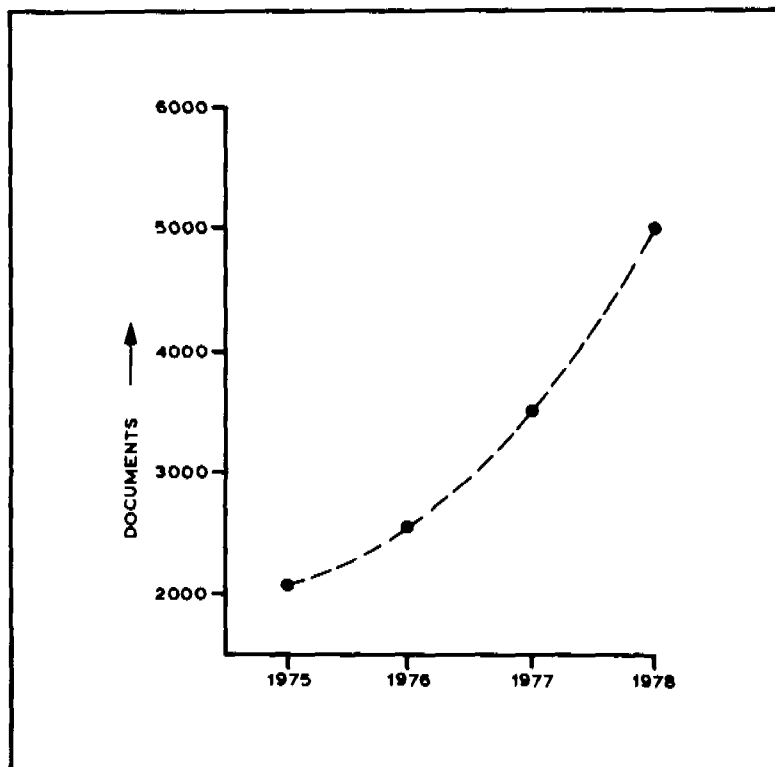
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<sup>\*/</sup> See figure 1

made operational for part of the library holdings during 1978. The keyword list contains, besides geographical entries, approximately 400 other keywords.

Together with programme and project support activities, the Unit also dealt with a number of bibliographic requests. Standard reference lists are available on several subjects at the moment, such as on water treatment for rural areas in developing countries, water storage, water and

*Figure 1 - rate of extension of IRC Library holdings*



health, rainwater harvesting, use of spring water, groundwater, rural water supplies, goals and problems, drinking water standards, service connections, desalination, disinfection, solar energy, sewage and excreta disposal, wind energy, etc. These references are not meant to be complete; their purpose is to help the enquirer to identify further sources of documentation.





## **ANNEXES**



**ORGANIZATIONS THAT GAVE FINANCIAL SUPPORT  
TO THE IRC (SINCE 1968)**

Canadian International Development Agency  
International Development Research Centre, Canada  
Netherlands Ministry of Foreign Affairs  
Netherlands Ministry of Public Health and  
Environmental Protection  
Pan American Health Organization, U.S.A.  
UNICEF, U.S.A.  
United Kingdom Ministry of Overseas Development  
United Nations Development Programme, U.S.A.  
United Nations Environment Programme, Kenya  
U.S. Agency for International Development  
Water Research Centre, United Kingdom  
World Bank (International Bank for Reconstruction  
and Development), U.S.A.  
World Health Organization, Switzerland  
World Health Organization/Regional Office for  
the Eastern Mediterranean, Egypt  
World Health Organization/Regional Office for  
South-East Asia, India





## COLLABORATING CENTRES

- 1 Institut d'Hygiène et d'Epidémiologie  
14 Rue Juliette Wytsman  
1050 Brussels  
Belgium
- 2 Companhia Estadual de Tecnologia de Saneamento  
Básico e de Defesa do Meio Ambiente (CETESB)  
Avenue Prof. Frederico Hermann Jr. 345  
C.E.P. 05450  
Sao Paulo  
Brazil
- 3 Fundação Estadual de Engenharia do Meio  
Ambiente (FEEMA)  
Rua Fonseca Teles 121 - 15<sup>o</sup> and  
Caixa Postal 23011 - ZC 09  
Rio de Janeiro, GB  
Brazil
- 4 Centre of General and Environmental Hygiene  
Institute of Hygiene and Epidemiology  
Srobárova 48  
10042 Prague - 10  
Czechoslovakia
- 5 Institute of Hygiene  
University of Aarhus  
Universitetsparken  
8000 Aarhus - C  
Denmark

- 6 Sanitary Engineering Department  
Faculty of Engineering  
University of Alexandria  
Alexandria  
Egypt
- 9 Office de la Recherche Scientifique et Technique  
Outre-Mer (ORSTOM)  
Section d'Hydrology  
24 Rue Bayard  
Paris 8e  
France
- 8 Department of Civil Engineering  
Faculty of Engineering  
University of Science and Technology  
Kumasi  
Ghana
- 9 All-India Institute of Hygiene and Public Health  
110 Chittaranjan Avenue  
Calcutta - 12  
India
- 10 National Environmental Engineering Research  
Institute (NEERI)  
Nehru Marg  
Nagpur - 440020  
India (regional centre)
- 11 Victoria Jubilee Technical Institute  
Matunga  
Bombay - 19  
India

12 Institute of Hydro-Sciences and Water Resources  
Technology  
University of Tehran  
64 Ghadessi Street  
North Boulevard Elizabeth  
Tehran  
Iran

13 Environmental Health Laboratory  
Hebrew University - Hadassah Medical School  
P.O. Box 1172  
Jerusalem  
Israel

14 Istituto di Recerca sulle Acque  
Consiglio Nazionale delle Ricerche  
Via Reno 1, Irsa  
Rome  
Italy

15 Centro Studi e Ricerche di Ingegneria Sanitaria  
University of Naples  
Piassale Tecchio  
80125 Naples  
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16 Department of Sanitary Engineering  
Faculty of Engineering  
University of Tokyo  
Tokyo  
Japan

17 Department of Civil Engineering and Architecture  
and School of Public Health  
American University of Beirut  
Beirut  
Lebanon

18 Testing and Research Institute of the  
Netherlands Waterundertakings, KIWA, Ltd.  
Sir Winston Churchilllaan  
Rijswijk 2109  
The Netherlands

19 Faculty of Engineering  
University of Lagos  
Lagos  
Nigeria

20 Pan American Centre for Sanitary Engineering  
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Calle los Pinos 259, Urbanizacion Camacho  
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- 28 Division of Water Hygiene  
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5600 Fishers Lane  
Rockville, Maryland 20852  
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- 29 National Sanitation Foundation  
P.O. Box 1468  
2355 West Stadium Boulevard  
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- 33 Comité Inter-africain d'Etudes Hydrauliques (CIEH)  
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\* / Voorburg (The Hague), The Netherlands,  
29th May - 2nd June, 1978

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McJUNKIN, Dr. F.E.	IRC Consultant
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SHARPE, E.C.	Consumer's Association, Harpenden, United Kingdom
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Ir. E.L.P. Hessing	(Programme Coordinator)
Ir. E.H.A. Hofkes	(Programme Officer)
Ir. P. Kerkhoven	(Programme Officer)
Ir. T.K. Tjiook	(Programme Officer)

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Ms. M. Marchant	(Administrative Assistant)
Ms. L. Metselaar	(Administrative Assistant)
S. Sewnath	(Administrative Assistant)



**LIST OF IRC PUBLICATIONS**

**TECHNICAL PAPERS**

- No. 1        *Plastic Pipe in Drinking Water Distribution Practice, 1971*
- No. 2        *The Suitability of Iodine and Iodine Compounds as Disinfectants for Small Water Supplies, 1972*
- No. 3        *The Purification of Water on a Small Scale, 1973 (out of print)*
- No. 4        *Health Aspects Relating to the use of uPVC Pipes for Community Water Supply, report of a Consultant Group, 1973*
- No. 5        *Health Aspects Relating to the use of Polyelectrolytes in Water Treatment for Community Water Supply, report of a Consultant Group, 1973<sup>\*/</sup>*
- No. 6        *The Potential Pollution Index as a Tool for River Water Quality Management, 1973*
- No. 7        *Health Effects Relating to Direct and Indirect Re-use of Waste Water for Human Consumption, report of an International Working Meeting, 1975*

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<sup>\*/</sup> Also available in French

- No. 8      *Prediction Methodology for Suitable Waste and Wastewater Processes, report, University of Oklohoma and U.S. Agency for International Development, 1976*
- No. 9      *Analysis of Organic Compounds in Water to Support Health Effects Studies, a Consultants Report, 1976*
- No. 10     *Hand Pumps for use in Drinking Water Supplies in Developing Countries, 1978 <sup>\*/</sup>*
- No. 11     *Design and Construction for Small Slow Sand Filtration Plants in Developing Countries, 1978*
- No. 12     *Public Standpost Water Supplies, 1978*
- No. 13     *Manual on Design and Construction of Public Standposts, 1979*
- No. 14     *Training Manual for Operation and Maintenance of Small Slow Sand Filters in Developing Countries, 1979*

#### **BULLETINS**

- No. 1      *Community Water Supply Research, 1971*
- No. 2      *Training Courses in Community Water Supply, 1971 (out of print)*
- No. 3      *Community Water Supply Research, 1972 (out of print)*

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<sup>\*/</sup> A Spanish version of this publication is now obtainable through the Pan America Centre for Sanitary Engineering and Environmental Sciences (CEPIS), Casilla Postal 2117, Los Cedros 269, San Isidro, Zone IV, Lima, Peru. Translation into French is in preparation.

- No. 4      *The Story of CIPHERI, 1972 (out of print)*
- No. 5      *Meeting of Directors of Institutions Collaborating with the WHO International Reference Centre for Community Water Supply, Bilthoven, The Netherlands, report of proceedings, 1973*
- No. 6      *Community Water Supply Research, 1973*
- No. 7      *Global Workshop on Appropriate Water and Waste Water Treatment Technology for Developing Countries, Voorburg, The Netherlands, 1977*
- No. 8      *International Workshop on Hand Pumps for Water Supply, Voorburg, The Netherlands, 1977*
- No. 9      *Slow Sand Filtration for Community Water Supply in Developing Countries, a selected and annotated bibliography, 1977*
- No. 10     *International Training Seminar on Community Water Supply in Developing Countries, Amsterdam, The Netherlands, 1978*
- No. 11     *Public Standposts for Developing Countries, proceedings of an International Expert Meeting held in Achimota (Accra), Ghana, 1978*
- No. 12     *Report of the International Meeting on Community Education and Participation in the IRC Slow Sand Filtration Project, Voorburg, The Netherlands, 1978*

## OTHER PAPERS

*Developing Countries Techniques in Water and Waste Treatment*, T.K. Tjiook, 1975

*Practical Solutions in Drinking Water Supply and Wastes Disposal for Developing Countries*, T.K. Tjiook, 1977

*Symposium on Community Water Supply in Development Cooperation*, report, 1977

*Towards an Improvement of International Transfer and Exchange of Information on Water Supply and Sanitation in Developing Countries*, W.-K. Hoogendoorn, 1977

*Community Water Supply and Sanitation, Basis to Rural Development*, T.K. Tjiook, 1978

*Integrated Development Planning Concept*, E.L.P. Helsing, 1978

*Special Training Problems in Rural Water Supply Projects in Developing Countries*, J. Haijkens and R.P.J. Turrell

*Hand Pump Technology for the Development of Groundwater Resources*, E.H.A. Hofkes and F.E. McJunkin, 1978

*Support Programmes in the Water Field*, J.M.G. van Damme and W.-K. Hoogendoorn, 1979 <sup>\*/</sup>

*The International Reference centre in the National Institute for Water Supply: review of ten years* <sup>\*\*/</sup>  
IRC, P. Santema, 1978 <sup>\*/</sup>

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<sup>\*/</sup>

Also available in French

<sup>\*\*/</sup>Published in Dutch

*The Water Decade and the IRC*, J.M.G. van Damme,  
1978 \*/

*Integrated Programme Development for Community  
Water Supply and Sanitation in Developing  
Countries*, E.L.P. Hessing, 1978 \*/

*Slow Sand Filtration for Drinking Water Supply  
in Developing Countries*, P. Kerkhoven, 1978 \*/

*Water Supply Technology in Developing Countries*,  
E.H.A. Hofkes, 1978 \*/

*The Development of Technological Capacities in  
Drinking Water Supply and Sanitation in  
Developing Countries*, T.K. Tjiok, 1978 \*/

*Basic Problem in Developing Countries: shortage  
of trained manpower*, J. Haijkens, 1978 \*/

*Two Know More Than One; exchange and transfer of  
information on drinking water supply between and  
in developing countries*, W.-K. Hoogendoorn, 1978 \*/

#### **IRC NEWSLETTER**

*Monthly Newsletter*, available (free of charge)  
in English and French. A Spanish version is  
available from the Pan American Centre for  
Sanitary Engineering and Environmental Sciences  
(CEPIS), Casilla Postal 2117, Los Cedros 269,  
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\*/ Published in Dutch



