



who international reference centre for community water supply

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newsletter

Newsletter No. 73 - January 1977

Happy and Prosperous 1977

The year 1977 promises to be an interesting year for our readers. In March the United Nations organize a Water Conference during which it is expected that water supply will play an important role. Not only the discussions and resolutions during the Conference themselves, but also the publicity which the Conference in an indirect way evokes, will no doubt lead to a strong support for all those who work in or for the water supply branch. It is with this in mind that the staff of the IRC wishes all its readers a happy and successful year.

The IRC will continue its work on technological and structural problems, thereby hopefully contributing to a quicker and better development of water supplies. Thus it aims at supporting the recommendation of HABITAT: United Nations Conference on Human Settlements, Vancouver, 1976, which stated that "safe water supply and hygienic waste disposal should receive priority". It stressed that programmes should be adopted with realistic standards for quality and quantity to provide water for urban and rural areas by 1990, if possible. "Water for all" may become one step nearer this year. During a symposium of the International Institute for Environment and Development in Washington in December 1976, it was mentioned that for the millions of people now lacking safe drinking water and related sanitation, "those facilities" could be provided through an annual expenditure equivalent to U.S. \$ 3.00 for every person in the Third World. In addition it was stated that the basic technology is available and that rural and urban communities concerned are potentially rich in human resources.

The IRC will continue to focus on an increased awareness of this problem, both at government and community level, and on community participation. Much attention will be paid to training of subprofessional manpower and to education and public information. Work will be further extended in "appropriate technologies", such as handpumps, public standposts and slow sand filtration; other technological items may be added. In the information and research sphere the IRC aims at cooperative work on health aspects of the reuse of wastewater. Resulting from discussions in the framework of the Ad Hoc Working Group on Rural Potable Water Supply and Sanitation, a global information system is now in preparation. In this context the Newsletter will continue to transmit information from the field. This year, more than ever, your contributions are very welcome.

Federal Republic of Germany

GROUND WATER RECHARGE

Artificial groundwater recharge is widely practised in public water supply in the Ruhr basin area. Until some 20 years ago the river water was directly charged through slow sand filters into the subsoil and recovered at some distance by perforated concrete pipes at a depth of about 7 metres. The deteriorating quality of the river water over the years resulted in shorter filter runs and increased cost for regular filter cleaning. O.R. Kuntschik discusses in the Journal of the American Water Works Association, 1976, 68, 546-551, pilot and full-scale studies on optimizing the treatment system by the installation of a gravel pre-filter. This unit can remove up to 80 per cent of suspended solids when the volatile component of the solids is less than 20 per cent and operates five years between backwashings.

German Democratic Republic

REUSE OF ALUM SLUDGE

Aluminiumsalt can be recovered from alum sludge in a flocculation process either by acid or by a strong alkali. L. Müller and B. Mau report in "Trends in treatment and recovery of flocculation sludges" which was published in German in Wasser und Wasserwirtschaftstechnik, 1976, 26, 312-313, the use of caustic soda in a ratio Al/NaOH equal to 1:2 at a reaction temperature of 80°C. About 45% of alum can be recovered as aluminate and the sludge has been reduced to between 50 and 60% of its former volume.

United Kingdom

EMERGENCY WATER TREATMENT

The Water Research Centre, Medmenham, England, has been developing an emergency water treatment plant with a capacity of 450 m³/day to cope with long drought periods during which potable water supply should be safeguarded. The plant should be transportable, be constructed from low-cost readily available components and be operated reliably with a minimum of attention.

T. Calcutt and others discuss in Water and Waste Treatment, 1976, 19, p. 21, the following alternatives considered: a) direct river water chlorination, b) upflow filtration followed by chlorination, c) downflow filtration followed by chlorination, d) upflow/downflow filtration followed by chlorination, e) coagulation prior to filtration followed by chlorination, f) coagulation prior to sedimentation/flotation and filtration followed by chlorination, g) desalination followed by chlorination.

U.S.A.

REMOVAL OF MERCURY

Rigorous controls on levels of mercury in drinking-water and increased monitoring mandated by the Safe Drinking Water Act urged an investigation into practical treatment techniques for lowering mercury levels in water. L. Thiem and co-workers report in the Journal of the American Water Works Association, 1976, 68, 447-451, on several treatment methods of aqueous solutions of mercury by various combinations of activated carbon, EDTA, tannic acid, citric acid and calcium. Samples close to neutral pH allowed the most effective treatment; good results have been obtained with small addition of tannic acid, also with progressively higher concentrations of Ca-ions.

RELATION OF HARDNESS AND CARDIOVASCULAR DISEASES

In an article titled "Hard water story, no recommendations" which appeared in the British Medical Journal, 1976, 2, 385-438, evidence that hard water is protective or that soft water is harmful in terms of cardiovascular diseases is reviewed carefully and critically. Mortality studies around the world are inconclusive and other factors such as air pollution, latitude, rainfall and temperature are also important. On the basis of current knowledge no action to alter the hardness of water supplies can be recommended.

AGRICULTURAL RUN-OFF AS A SOURCE OF HALOMETHANES

R.L. Morris and L.G. Johnson in the Journal of the American Water Works Association, 1976, 68, 492-494, provide information on the quality relationship between raw and treated drinking-water based on the analysis of water from various sources. There is a correlation between high agricultural run-off and peaks in halomethanes in the treated drinking-water. To minimize chloroform production during disinfection, turbidity removal prior to chlorination is shown to be critical. Reference is made to inexpensive new methods available to test for halomethanes.

REVERSE OSMOSIS

J.E. Cruver and J.H. Sleigh compare in Industrial Water Engineering, 1976, 13, 8-11, reverse osmosis with other desalination techniques such as multi-stage flash and vertical-tube evaporator distillation. It is the writers' suggestion that reverse osmosis is likely to replace existing distillation techniques because of the reduced energy requirements and the ability to increase the capacity at relatively low cost by adding extra modules.

MAGNETIC SEPARATION

R. Mitchell et al describe a new approach to water and waste treatment in Progress in Water Technology, 1975, 7, 349-355. The water is treated with magnetic alum and montmorillonite and passed through a stainless steel mesh between the poles of a magnet. Phosphates, algae, bacteria and viruses are removed at a very rapid rate.

Meetings

United Nations Water Conference.

Mar del Plata, Argentina, March 14-25, 1977.

Information: United Nations Headquarters, 866 United Nations Plaza, New York, N.Y. 10017, U.S.A.

Opportunities for Innovation in Sewerage.

Reading, March 21-25, 1977

Information: Mr. Cooper, Water Research Centre, Medmenham Laboratory, P.O. Box 16, Medmenham, Marlow Bucks, SL7 2HD, England.

One-day Seminar on the Operational Aspects of the Drought of 1975-76.

London, March 29, 1977.

Information: Bernard Dangerfield, Deputy Secretary, The Institution of Water Engineers and Scientists, 6-8 Sackville Street, London W1X, 1DD, England, Tel.: 01-734 5422

Modelling of water quality in natural systems.

Newcastle upon Tyne, 27 March - 1 April 1977.

Biological Treatment of waste water.

Newcastle upon Tyne, 17 - 22 April 1977.

Information: The Administrative Assistant, Department of Civil Engineering; University Newcastle upon Tyne NE1 7RU, Great Britain.



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newsletter

Newsletter nr. 74 - February 1977

IRC

SELECTION OF APPROPRIATE PROCESSES

The University of Oklahoma under the guidance of Regents Professor George W. Reid has been engaged in a programme sponsored by the United States Agency for International Development (US AID) to study Low Cost Methods of Treating Water and Wastewater in Developing Countries.

One of the basic activities in this project is the development of a methodology to be used for selecting appropriate treatment processes which are related to prevailing socio-economic conditions. Using parameters such as socio-economic factors, in-country resources, demographic data, water quality and cost the model is intended to forecast the most suitable treatment process under the given conditions and become a tool for planning engineers. The model was presented for discussion in a global workshop on Appropriate Water and Waste Water Treatment Technology for Developing Countries, which was jointly organized by the University of Oklahoma and the International Reference Centre for Community Water Supply in Voorburg from 17-22 November, 1975. In discussing the model, the potential role in planning was recognized although field validation is required. The workshop recommended that testing and validation of the model must be carried out in as many situations as possible. By publishing the "Prediction Methodology for suitable Water and Wastewater Processes" as IRC Technical Paper Series No 8 and exposing this to an extended readership, the International Reference Centre for Community Water Supply intends to create an opportunity for testing, feedback of information and comment. The publication can be requested from IRC, P.O. Box 140, Leidschendam, the Netherlands.

India

CHARCOAL POWDER AS FILTER AID

In diatomite filters a layer of diatomaceous earth is built up on a porous septum to serve as strainer for the water to be filtered in mobile units for water purification in the field and as stationary units for swimming pools. As diatomaceous earth is frequently an import product, studies have been made of possible indigenous replacement material. The National Environmental Engineering Research Institute in Nagpur has found a wood charcoal powder of 50-100 microns particle size suitable as filter aid. For an effective filter cake 1075 ± 10 g per m² septum area charcoal powder was needed. Experiments have been conducted with filtering rates of 2.2 m³/(m² septum area)/hour up to a headloss of 2,8 kg/cm². With low raw water turbidities of 5-10 Formazin Turbidity Units, 5,0-5,5 m³ filtered water has been obtained with 0,2-0,4 FTU. High turbidity water (115-125 FTU) gave 0,2-0,3 m³ filtered water with turbidities of 1,5-2,5 FTU. At low turbidity levels the filter aid can be used 3-4 times; the cost is only one fifth to one seventh imported diatomaceous earth.

Lesotho

WATER FOR LIFE

The conference "Water for Life" is concerned with policy aspects of water and effluent management in Southern Africa. Sponsors are the International Association on Water Pollution Research and the International Water Supply Association in collaboration with the Government of Lesotho. It will be held in Maseru, Lesotho from 6-9 June 1977 and comprise: Water and effluent management policy; realistic quality and health criteria; education and training; planning for optimum utilisation of water resources; economic aspects of water supply and effluent treatment schemes. For further information please contact IAWPR, Chichester House, 278 High Holborn, London WC1, England.

U.S.A.

NEW DIRECTIONS IN ION EXCHANGE

C. Calmon and H. Gold discuss in Environmental Science and Technology, 1976, Vol. nr. 10, 980-984, new developments in ion exchange. In the Australian Sirotherm process for desalting brackish water, the service cycle (desalting) takes place at ambient temperatures; regeneration does not require chemicals, but can be accomplished by washing with hot water (85-90°C). Other specific ion exchange materials have been developed, also those which can remove specific contaminants such as nitrates, iron, etc.

WATER QUALITY AND REMOTE SENSING

Differences in tone qualities have been identified in pictures made by multispectral scanning from LANDSAT-1, a space observatory which was launched under NASA's Earth Resources Technology Satellite Program. When the satellite data were compared with available analyses of 100 lakes in 4 states, it was found that the water quality information derived from the photographs correspond to water quality rankings based on sampling made by the EPA. The great potential of the above remote sensing technique for lake nutrient surveillance is discussed in the EPA's report "Trophic Classification of Lakes using LANDSAT-1 (ERTS-1) multispectral Scanner Data"; the report is available under nr. EPA - 600/376037, through the Corvallis Environmental Research Laboratory, 200 SW, 35th Street, Corvallis, Oregon 97330, U.S.A.

FERRATE FOR DISINFECTION

M.B. Gilbert et al investigated the germicidal properties of iron (VI)-ferrate in water to ascertain its potential as an alternative to chlorine disinfection. From the data obtained it appears that the use of ferrate to disinfect water is entirely feasible in terms of germicidal efficiency, particularly in waters with a pH below 8. Moreover, the oxidizing capability of ferrate is theoretically sufficient to offer a potential for at least partial oxidative destruction of the soluble organic fraction (the potential precursors to organohalides) in water. This is important, because ferrate does not provide a stable residual, and moderate chlorination would be required in order to maintain residual germicidal protection. The results are reported in the Journal of the American Water Works Association, 1976, 68, 495-497.

New Publications

Surveillance of Drinking-water Quality, Geneva, World Health Organization (Monograph Series Nr. 63) 136 pages, price: Sw. fr. 29,, U.S. \$ 11.60. Available through WHO sales agents. Russian and French and Spanish editions in preparation.

Without proper surveillance necessary to detect any actual or potential threat to health associated with either the water supplied or with the distribution network, a water supply system may become a dangerous channel for spreading water-borne disease. The elements of a surveillance programme include an engineering examination (or sanitary survey) of the whole system, physical, biological (particularly bacteriological), and chemical examination of frequent and representative water samples, and institutional examinations relating to the efficiency of the supply system's operation and management. Water quality surveillance is therefore a continuing activity, and certain procedures and tests must be carried out rigorously, conscientiously, and frequently in order to protect health and inspire public confidence in the safety of the water supplied. Following an introductory chapter, the monograph covers the organization of a surveillance agency, laws, regulations, and standards relating to water quality, personnel requirements, sanitary surveys, sampling of drinking-water, analysis of samples, remedial action, and surveillance of special systems such as rural and village supplies, water supplies for slums, ice manufacture, and bottled water. The annexes include specimen surveillance programmes, training courses for personnel, medical examination of waterworks operators, sanitary survey guidelines, plumbing defects, chemical and bacteriological analytical methods, and also a detailed sample reporting form for a municipal water supply sanitary survey and a checklist for collection of water samples for bacteriological examination.

Groundwater Storage and Artificial Recharge, by the Department of Economic and Social Affairs of the United Nations, New York, 1975.

Sources of Information in Water Resources: an Annotated Guide to Printed Materials, by G.J. Giefer, New York, Water Information Center, 1975.

Meetings

Congress and Exhibition "Water, Berlin"
Berlin, Federal Republic of Germany, May 10-15, 1977
Information: AMK, Messedam 22, D1000 Berlin 19, West-Germany

Almost simultaneously taking place at Berlin are:

Joint colloquium on hydrotechnical problems conducted by the German Society of Gas and Water experts and the German Federation of the Gas and Water Industry, May 10-11, 1977

Annual convention of the Water Chemistry Section of the German Chemical Society, May 16-18, 1977

National Conference on Water

St. Louis, Missouri, U.S.A., May 23-25, 1977

Information: Water Resources Council, 2120L Street, N.W. Suite 800, Washington D.C., U.S.A.



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newsletter

Newsletter No. 75 - March 1977

Belgium

DESALINATION

The 1976 information bulletin of the Belgian National Association of Water Undertakings contains the following papers which were presented at the Associations Conference on Desalination held on May 22-23 1975 in Ostende: Desalination of sea and brackish water; sea and brackish water; desalination by electrodialysis; Water treatment by hyperfiltration; Desalination by distillation; Several Desalination Projects in Belgium. Information: Anseau-Navewa, Belliard Street 197, 1040-Brussels, Belgium.

United Kingdom

TRACE METALS IN RIVER WATERS

A review of the technical literature on the concentrations and forms of trace metals in river waters has been published in WRC Technical Report TR16, by the Water Research Centre, Stevenage Laboratory, Elder Way, Stevenage, Herts SG1 1TH. In view of the marked variations in metal concentrations that occur with time, position in the river and river discharge, great care is advised in planning analytical programmes. Moreover, the complex relationship between the metal fractions in the water and those in river sediments causes difficulty in determining actual total concentrations. The forms in which metals occur in river waters also affect, for instance, their toxicity and removal in treatment plants. Before the significance of such factors can be properly understood, suitable techniques for investigating the forms of metals should be established.

RESEARCH ON PLUMBING MATERIAL

The Thames Water Authority (previously Metropolitan Water Board) has investigated the effects on water quality of the use of materials used in plumbing including rubber products, paints, coatings, packing materials, greases and lubricants. Leather washers and jute caulking materials affect the bacteriological quality of water, by the growth of fungi and increase of coliforms. The findings indicate that use of the following materials should be avoided: jointing materials based on linseed or any other vegetable oil or shellac tallow or other animal fats; vegetable-tanned leather, some mineral oils or greases; all vegetable fibres including jute and hemp unless treated with an approved biocide.

U.S.A.

ANALYSIS OF HALOFORMS

Recently there has been evidence that chloroform may be carcinogenic; the amount of haloforms in drinking-water is therefore a matter of concern. Storage of water samples has often produced an increase in haloforms as chlorine compounds reacted with substances in the water; L.D. Kissinger and J.S. Fritz have found that samples can be stabilized by adding ascorbic acid so that analysis of these samples would give the correct composition. Reference: Journal of the American Water Works Association, 1976, 68, 435 - 437.

MERCURY REMOVAL BY ACTIVATED CARBON

Rigorous controls on levels of mercury in drinking-water and increased monitoring mandated by the Safe Drinking Water Act urged an investigation into practical treatment techniques for lowering mercury levels in water. Aqueous solutions of mercury were treated by various combinations of activated carbon, EDTA, tannic acid, citric acid, and calcium. Samples close to neutral pH allowed the most effective treatment; quite small additions of tannic acid dramatically increased treatment success, as did progressively higher concentrations of calcium ions. Reference: Journal of the American Water Works Association, 1976, 68, 447 - 451.

New Publications

World Health Statistics Report, vol. 29, Nr. 10, 1976. Bilingual: English and French. Available from WHO sales agents, price: Sw.Fr. 17.

This special issue on "Water and Sanitation" reviews the progress of community water supply and excreta disposal services in the developing countries in the period 1970 to 1975, furnishes estimates of investments required to meet the WHO targets for 1980 and outlines courses of action to meet these goals.

World Health magazine. WHO has devoted the January 1977 issue of its magazine to the subject of water, marking the occasion of the UN Water Conference taking place in Mar del Plata, Argentina, 14 to 25 March, 1977.

Ambio, Vol. 6, Nr. 1, 1977, was published as a special issue in connection with the United Nations Water Conference (Mar del Plata), Argentina). It was produced with the support of the United Nations Environment Programme.

Feachem, R., McGarry, M. & Mara, D. Water wastes and health in hot climates, New York, John Wiley & Sons Ltd., 1977, 416 pp, U.S. \$ 24.

Donald Johnson, J. Disinfection: water and wastewater, Ann Arbor Science Publications, 1975, 432 pp U.S. \$ 32.50.

Proceedings of the Symposium on Maintenance of Water Quality, London Institution of Water Engineers and Scientists, 1976. Available from IWES, 6-8 Sackville Street, Picadilly, London W1X, 1DD, England.

Aquatic herbicides. Proceedings of a Symposium held in January 1976 at Oxford, British Crop Protection Council, monograph Nr. 16, 1976, 121 pp.

Gloyna, E.F., Malina, J.F. & Davis, E.M., ed. Ponds as a wastewater treatment alternative, Texas University, Center for Research in Water Resources, 1976, 459 pp.

Meetings

30th International Days, 1977, organized by the Belgian Study and Documentation Centre for Water, Air and Environment.

Luik / Gent, Belgium 16-18 May, 1977

Information: Cebedeau-Becewa, rue A. Stévertz, B-400 Liège, Belgium

Importance of groundwater for the water industry

Kitzbühel, 7-10 June, 1977

Information: Osterreichischer Wasserwirtschaftsverband, An der Hülben, 4/1, A-1010, Vienna, Austria

International Conference on Advanced Treatment and Reclamation of Waste Water

Johannesburg, 13-17 June, 1977

Information: Conference Secretary S.131, C.S.I.R., P.O. Box 395, Pretoria 0001, Republic of South Africa

7th International Fair for Environmental Protection Pro Aqua-Pro Vita 1977

Basel, Switzerland, 14-18 June, 1977

Information: Secretariat Pro Aqua-Pro Vita, P.O. Box 4021, Basel, Switzerland

Symposium on the Optimal Development and Management of Groundwater and Workshop on Education in Hydrogeology

Birmingham, England, 24-30 July, 1977

Information: Dr. J.W. Lloyd, Organizing Secretary IAH Symposium, Dept. of Geological Sciences, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, England

Engineering for Health in Hot Countries

Loughborough, England, September 25-27, 1977

2nd International Symposium on Aquatic Pollutants

Noordwijkerhout, Netherlands, September 26-28, 1977

Information: 2nd ISAP 1977 - Congress Office c/o KIVI, 23 Prinsessegracht, The Hague, The Netherlands

Workshop on Problems of Water and Wastes in the larger African towns

Venue yet unknown, end 1977 / beginning 1978

Information: Environment Training Programme ENDA, Mr. P. Langley, P.O. Box 3370, Dakar, Senegal

Courses

The International Institute for Hydraulic and Environmental Engineering (IHE) will organize four 11-months postgraduate courses in Delft, The Netherlands, each from October 1977 - September 1978, namely: International postgraduate course in hydraulic engineering; International postgraduate course for hydrologists; International postgraduate course in environmental science and technology; International postgraduate courses in sanitary engineering. Information and prospectus: The Registrar IHE, Nuffic, Molenstraat 27, The Hague, The Netherlands.



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newsletter

Newsletter No. ²²⁶ - April 1977

Canada

GROUNDWATER IN DEVELOPING COUNTRIES

In groundwater, as in many other fields, national and regional development in the Third World is being retarded by an acute lack of coordinated information. This Preliminary bibliography on Groundwater in Developing Countries, 1970-1976, by D.A.V. Stow, J. Skidmore and A.R. Berger and published by the Association of Geoscientists for International Development, provides a guide to recent work on the sub-surface water resources of developing countries. It contains references to 1574 items, each dealing at least in part with groundwater, published in 1970 or later and related directly to developing countries. There are indexes by country and by subject. This bibliography is being circulated widely both to individual groundwater specialists working in, or concerned with, the developing countries and to national and international organizations active in the field. With it goes a questionnaire asking for critical comments about the bibliography and for corrections and additions. Also organizations involved in groundwater are requested to provide a brief assessment of their information capabilities and needs. Information: The Secretary-Treasurer AGID, c/o Department of Geology, Memorial University, St. John's, Newfoundland A1C 557.

Israel

NEW DESALINATION TECHNIQUE

Forty percent of the capital investment in a conventional desalination plant goes in the large amount of metal tubing required. According to the Direct Contact Condensation Distillation Method, hot brine and cold distilled water are flowing side by side and are only separated by a low divider in the same container. Warm vapour from the brine condenses on the surface of the other cooler stream. Pilot plants have been set up with 40 m³ and 200 m³ per day capacity. A semi-industrial plant with a capacity of 3000 m³ distilled water per day is now being planned which is expected to produce water at 30% less cost than current distillation processes. Information: A. Kogan, Technion-Israel Institute of Technology, Technion City, Haifa 32000, Israel.

Luxembourg

HARDNESS OF DRINKING WATER AND PUBLIC HEALTH

Luxembourg, May 1975, edited by R. Amavis, W.J. Hunter and J.G.P.M. Smeets. The publication discusses the following: Hardness of drinking water in relation to its other physico-chemical quality parameters; intake of minerals by man; epidemiological data relating to the physico-chemical quality of drinking water; current research on the presence of mineral elements in drinking water and food in relation to public health; conclusions and general discussion; supplementary reports presented during discussions. It is published for the Commission of the European Communities by Pergamon Press. 554 pp. \$35.00.

The Netherlands

SECOND INTERNATIONAL SYMPOSIUM ON AQUATIC POLLUTANTS

The latest findings on environmental behaviour and biological effects of aquatic pollutants will be exchanged and evaluated in a symposium, to be held in Noordwijkerhout (Amsterdam), the Netherlands, 26-28 September, 1977. Like the earlier first symposium, which was held in Athens, Georgia, U.S.A., the forthcoming conference will be of great interest to analytical chemists, toxicologists, ecologists, epidemiologists and others concerned with biological effects of aquatic pollutants. Special attention will be paid to pollutants exerting long term toxic effects ("black list compounds"). Further information and registration: the Congress Office, 2nd ISAP 1977, c/o KIVI, 23 Prinsessegracht, The Hague, the Netherlands.

Thailand

INTERNATIONAL CONFERENCE ON "WATER POLLUTION CONTROL IN DEVELOPING COUNTRIES", BANGKOK
The above conference under the auspices of the Asian Institute of Technology will be held in Bangkok, February 21-26, 1978. Papers are invited on the following topics: River, estuary, lake and reservoir quality management; models and techniques of resource allocation involving water pollution control; methodology and techniques development; assessment and updating of water pollution control standards; water pollution control technology for industries and municipalities; monitoring and laboratory techniques for analysing and assessing water quality; management techniques for operator and personnel training; public health aspects of water pollution control; integrated approaches to water and air pollution and solid waste problems; energy and useful by-product recovery from wastewater. Information: Dr. E.A.R. Ouano, The Conference Secretary, Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand.

United Kingdom

WATER QUALITY INDEX

The Scottish Development Department has developed a water quality index which combines the results of routine water analyses of river water. The report: Development of a Water Quality Index gives details of and compares various index systems and provides a method of classifying river water quality. Information: Applied Research and Development Programme, Scottish Development Department, Engineering Division, Pentland House, 47 Robb's Loan, Edinburgh EH14, 1TY.

U.S.A.

APPROPRIATE TECHNOLOGY SOURCEBOOK

The Appropriate Technology Sourcebook (1976) by Ken Darrow and Rick Pam gives annotations of practical plans and literature for village and small community technology. Reviews of more than 375 publications with 200 illustrations emphasizing small-scale systems using local skills and resources are given on topics such as: alternative sources of energy, agriculture and agricultural tools, low cost housing, health care, water supply and waste disposal, village industries. Information: Appropriate Technology Project, Volunteers in Asia, P.O. Box 4543, California 94305. 304 pp. \$4.00, with a special price of \$2.00, for local groups in developing countries.

MANUAL OF CHLORINATION

Water Chlorination Principles and Practices is a publication of the American Water Works Association (1973). The manual was prepared by an Ad Hoc Committee for the Development of a Chlorination Workshop. One of the objectives of the workshop was to acquaint the experienced operator with the theory, application, and safety factors pertaining to the use of chlorine in water supplies. The following chapters appear in the manual: Chlorination development; chlorination material; water chlorination principles; chlorination practices; distribution system chlorination; chlorination control; safe handling practice and chlorination equipment. 92 pp. \$7.00, AWWA, 6666 W. Quincy Avenue, Denver, Colorado 80235.

New Publications

A comprehensive consultant's report by Dr. A.W. Garrison, entitled Analysis of Organic Compounds in Water to support Health Effects Studies, has been published in the IRC Technical Paper Series No. 9. The study examines and classifies the data available thus far on organic compounds in water and summarizes the current status of the analytical methodology for these compounds. The need for certain improvements in the methodology is shown, and factors are discussed that must be considered when developing protocols for the analysis of organic compounds in water to support epidemiological studies. The report has been prepared to assist those involved in health-effects studies relating to the re-use of wastewater for human consumption. It forms part of the IRC programme for the exchange of scientific information and the coordination of research in this field.

Resources for sanitation programmes in developing countries are limited and therefore must be used judiciously to obtain the best possible effect. Cost-benefit analysis is a tool that permits the better utilization of available resources. In the Bulletin of the World Health Organization, 1976, 54, 207-215, B. Cvjetanovic and B. Grab describe a simple method for rough determination of the cost-benefit balance point which requires little computation. To reduce the computations to a minimum, nomograms have been constructed which require little or no mathematical skill for their use.

Meetings

Engineering, Science and Medium in the Prevention of Water-related Disease.
London, December 11-14, 1978.

Information: Tropical Symposium Organizer, Conference Officer, Institution of Civil Engineers, Great George Street, Westminster, London SW1P 3AA, England.



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newsletter

Newsletter No. 77 - May 1977

IRC

GLOBAL WORKSHOP ON APPROPRIATE WATER AND WASTE WATER TREATMENT TECHNOLOGY FOR DEVELOPING COUNTRIES

The results of the above workshop organized in a collaborative effort between the University of Oklahoma and the International Reference Centre for Community Water Supply, is reported in No. 7 of the IRC's Bulletin Series. The workshop which was held in Voorburg from 17-22 November 1975 had as its objectives: to assess the state of the art and to identify the role that appropriate technology can play in the development of water supply and sanitation in developing countries; to formulate technical and organizational recommendations and to agree upon priorities for studies, projects or other activities and to discuss the operation mechanisms for implementing the activities planned as a result of the meeting. Copies of the report are available on request from IRC, P.O. Box 140, 2260 AC Leidschendam.

EXPERT MEETING ON PUBLIC STANDPOSTS FOR DEVELOPING COUNTRIES

Since 1975 the IRC has conducted a study on methods of dispensing water at public standposts which are being or have been used in developing countries, and which have proved to be successful in terms of reduction of wastage, and ease of operation and maintenance. The IRC commissioned consultants to undertake field surveys on the technical, financial, operational and social aspects of this type of water supply. These studies resulted in the compilation of a draft report, which does not give a complete picture of all systems with their advantages and disadvantages, but which at the moment is probably the best compendium on this subject. Before official publication takes place it is intended to have the report reviewed and supplemented by a number of water supply experts, who are well acquainted with all aspects of public standpost systems. To this end an expert meeting was held from 8 to 12 August 1977 near Accra in Ghana, where assistance in the local organization was received from the Ghana Water and Sewerage Corporation. About 20 participants from various developing countries and international organizations have commented on the draft report and formulated recommendations for follow-up studies and activities. Information: International Reference Centre for Community Water Supply, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

Canada

GLOBAL WATER QUALITY MONITORING

Funded by the UN Environment Programme a project to monitor long-term trends in water pollution will cooperatively be managed by the World Health Organization, United Nations Educational, Scientific and Cultural Organization and the World Meteorological Organization. The purpose of monitoring is to detect any serious deterioration of the aquatic environment as a result of the introduction of man-made pollutants and to provide advance warning to mankind. Main components in the project are: establishment of a global network of monitoring stations (300 stations in the period 1977 - 1979) at appropriate sites in rivers, lakes and aquifers; adaption of uniform methodologies of water sampling and analysis; application of a continuing analytical quality assurance programme; development and use of a comprehensive data storage and retrieval system, the programme will operate at national, regional and global level. Information: World Health Organization (Attn.: Control of Environmental Pollution and Hazards) or WHO Collaborating Center on Surface and Groundwater Quality, Canada Centre for Inland Waters, Burlington, Ontario, Canada.

India

PILOT DEFLUORIDATION PROJECT

A pilot defluoridation project was undertaken by scientists of the National Environmental Engineering Research Institute (Nagpur) in 119 villages of Andhra Pradesh where fluorosis is endemic. A massive door-to-door campaign of educating the masses in the treatment of fluoride-bearing water was carried out. A team analyzed the source of the water, fixed doses of the defluoridation chemicals and held practical demonstrations in these villages. According to the Nalgonda technique, lime, bleaching powder and filter alum are added subsequently to the water, stirred for ten minutes and settled for an hour. The clear supernatant liquid contained fluoride within the permissible limits. Based on the success of the project, the Andhra Pradesh Government planned to extend the programme to the entire district.

South Africa

DESALINATION

G.R. Botha and G.L. Dalton outline in a paper of the National Institute for Water Research, Pretoria, the current status of various desalination processes including an indication of their operating costs. They suggest that reverse osmosis, which is being practised for brackish water conversion, should be considered for seawater desalination.

U.S.A.

COST OF SMALL LABORATORIES

In Public Works, 1976, No.12, p. 53-55 and 93, D.W. Clark has reviewed the cost of establishing small laboratories at water and sewage works. Typical costs are given for routine analysis, major pieces of equipment and also for optional pieces of equipment.

COAGULANT AIDS FOR WATER TREATMENT

The U.S. Environmental Protection Agency has produced a list of coagulation aids which may be used in water treatment without adverse physiological effects when used in concentrations recommended by the manufacturer and provided the products continue to meet the quality specifications. The list contains details of manufacturers, products and maximum recommended concentrations. Reference: Official Bulletin, North Dakota Water and Pollution Control Conference, 1976, No.3, p. 24 - 27.

ECONOMICS OF WATER TREATMENT

In the last of a series of 14 articles on "Potable Water Treatment, Technical and Economic Analysis", in Water and Sewage Works, 1977, No.1, p. 46 - 49, P.N. Chemisinoff et al present graphs for calculating capital and operating costs of unit processes for water treatment, which were described in previous articles in the same journal. A bibliography of 20 references is appended.

OZONE REVIEW

In Science of the Total Environment, 1977, No.2, p. 99 - 108, J. Lawrence and F.P. Cappelli review the literature on the use of ozone for treatment, i.e. disinfection, taste and odour removal, and compare its efficiency to chlorine. A bibliography of 51 references is appended.

New Publications

Brater, E.F. and King, H.W. Handbook of Hydraulics for the Solution of Hydraulic Engineering Problems, 1976, 6th edition, McGraw Hill, New York, U.S.A.

Manual on Fluoridation Principles and Practices, AWWA Publications, Order Department, 6666 W. Quincy Avenue, Denver, Colorado 80235, U.S.A.

A Bibliography for the Flotation for Water and Waste Treatment Conference, Felixstone, 8 - 10 June, 1976, Water Research Centre, Medmenham Laboratory, P.O. Box 16, Henley Road, Medmenham, Bucks SL7 2HD, England.

Water for the Thousand Millions. The Water Panel of the Intermediate Technology Development Group (compiler/editor A. Pacey), London, 1977. Available from: Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, England. Price: U.S. \$ 4 or U.K. £ 2.50. This paper, prepared for the U.N. Water Conference, discusses appropriate water supply technology and criteria for appropriateness (technical, social and economic), with emphasis on organization and maintenance.



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newsletter

Newsletter No. 78 - June/July 1977

IRC

Under the joint sponsorship of the United Nations Environment Programme and the World Health Organization, a 230-page handbook "Hand Pumps" has been published (Technical Paper Series No. 10 of the International Reference Centre for Community Water Supply). It is a state-of-the-art report containing numerous drawings, illustrations and photographs. Topics discussed include rationale for use of hand pumps, history of hand pumps and description of various types of hand pumps. The principles of operation, nomenclature, hydraulic, structural and energy analysis and the design of each component of reciprocating hand pumps are described with examples. The administration of hand pump programmes, with emphasis on installation and maintenance practices, is also discussed. The results of the International Workshop on Hand Pumps for Water Supply, organized by the International Reference Centre for Community Water Supply, are reported in No. 8 of the IRC's Bulletin Series. The workshop which was held in Voorburg from 12-16 July 1976 had as its objectives: to review, evaluate and supplement the draft report on hand pumps, as prepared by the consultant Professor F.E. McJunkin; to commence the preparation of integrated guidelines for water supply projects using hand pumps, to recommend further studies and activities in planning, technology, and management aspects of hand pumps and to formulate international collaborative programmes with a view to initiating their implementation. Copies of both the handbook and the report are available on request from IRC, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

Japan

WATER TREATMENT PRACTISE

In the Journal of the American Water Works Association, 1977, 69, no. 3, pp. 166-170, K. Tomono reviews the state-of-the-art of water treatment in Japan and refers to operations and processes such as active carbon treatment, lamella sedimentation, declining-rate filtration, bio-oxidation of ammonia nitrogen and sludge disposal.

New Zealand

GROUND WATER SAMPLER

In the Journal of Hydrology N.Z., 1976, 15, no. 1, pp. 41-45, G.N. Martin describes a ground water sampler for use in unpumped wells with static water levels deeper than 10 metres. By applying pressure to the sample chamber, the water is driven up a delivery tube to the surface. The device is small, easy to operate and can be autoclaved for bacteriological analysis.

Pakistan

ALGAE AND ITS UTILIZATION

Proceedings of a national panel on "Algae and its utilization" in April 1976 have been published by the Institute of Public Health Engineering and Research, Lahore. Beneficial aspects and detrimental effects of algae were discussed in 16 papers and a keynote address and cover: their use as feed; how to grow; algae blooms; their role as oxygen producer and effect on the operation of slow sand filters.

United Kingdom

FLOTATION

Proceedings of the Water Research Centre Conference on Flotation for Water and Waste Treatment which was held in Felixstowe 8-10 June 1976 will be published by September 30, 1977. Included are papers which were discussed in sessions on treatment of sewage and industrial effluent; thickening of activated sludge; potable water, research and development, and experiences with commercial plant design. Price £ 15 plus postage. Information: Water Research Centre, Medmenham Laboratory, Henley Road, Medmenham, Marlow Bucks SL7 2HD, England.

COMMITTEE ON NEW CHEMICALS

The Tenth Statement of May 1977 of the Committee on new chemicals and materials of construction for use in public water supply and swimming pools, shows appendices with complete lists of those products that the committee considers, subject to certain conditions, to be unobjectionable on health grounds for the treatment of, or to be in contact with, water for the purposes indicated. The lists include products such as coagulant and coagulant aids, other treatment chemicals, additives in sea water distillation plants to provide potable water, materials of construction, pipe lubricants and protective coatings, chemicals for swimming pools (disinfectants, algicides, etc.). Information: The Secretary Committee on New Chemicals, Department of the Environment, 2, Marsham Street, London SW1P 3EB, England.

HAND DUG WELLS

The manual "Hand Dug Wells and their Construction", by S.B. Watt and W.E. Wood, is intended as a guide to the hand digging of village wells in tropical or sub-tropical areas, where cost has to be kept to a minimum and the villagers are able and willing to contribute the labour required. Hand-dug shaft wells are described as well as constructions by relatively unskilled villagers. Modern concepts, methods and designs are incorporated, but in such a way that the actual work does not require a high degree of training, skill or supervision. The simple directions are based upon proven methods and satisfactory results gathered from various parts of the world. Obtainable from Intermediate Technology Publications Ltd. 9, King Street, London WC2E 8HN, England. Price £5.

United Nations

UNITED NATIONS WATER CONFERENCE

The United Nations Water Conference which was held in Mar del Plata, Argentina in March of this year (see Newsletter No. 68) and which was attended by representatives of 116 nations, was successful in creating a greater consciousness for the problems and the need for international cooperation in the water sector. For reaching the goals it was recommended that the decade 1980-1990 should be designated the International Drinking Water Supply and Sanitation Decade and should be devoted to implementing the national plans for drinking water supply and sanitation in accordance with the plan of action formulated. This implementation will require a concerted effort by countries and the international community to ensure a reliable drinking water supply and provide basic sanitary facilities to all urban and rural communities on the basis of specific targets to be set up by each country, taking into account its sanitary, social and economic conditions.

USA

PUMP-WELL CONSTRUCTION RELATION

Cavitation should be avoided in designing submersible pumps for boreholes. In the article "Submersible pump design: dependent on well diameter and depth" in Water Well Journal, 1977, 31, no. 3, pp. 51-54, borehole/casing diameters from 1,3 to 1,5 times the nominal size of the pump is recommended for economic life and least maintenance.

New Publications

"Guide de l'Eau 1976/77". P. Johanet et ses fils. Paris 1976, pp. 1070.

"Health Hazards from New Environmental Pollutants". World Health Organization. Technical Report Series No. 586. Geneva, 1976. pp. 96. Price: Sw.fr. 8.-

"Indexed Bibliography of Publications on Water and Waste Engineering for Developing Countries", edited by J.F. Pickford, June 1977. Price £ 7. Available from: Department of Civil Engineering, University of Technology, Loughborough, Leicestershire LE11 3TU, England. Also available through this address are the proceedings of the following conferences on Water and Waste Engineering for Developing Countries: Environmental Health Engineering in Hot Climates and Developing Countries, 1973. Price £ 3. Water, Waste and Health in Hot Countries, 1975. Price £ 5. Planning for Water and Waste in hot countries, 1976. Price £ 5.

Conferences

Seminar on Disinfection.

Moncton, New Brunswick, Canada, September 21, 1977.

The seminar will review current knowledge on the impact alternatives which are available, and recommendations which have resulted from several recent reviews of chlorination.

Information: G.L. Trider, c/o Environmental Protection Service, Fisheries & Environment Canada, 5151 George St., 16th Floor, Halifax, N.S. B3J 1M5, Canada.



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newsletter

Newsletter No. 79 - August 1977

India

DUAL MEDIA FILTERS

Experiments are being conducted at Kanpur Water Works to convert rapid sand filters into dual media filters, using bituminous coal and sand. The top half of the 24 inch (60 cm) deep sand layer is replaced by bituminous coal of effective size 0,9 mm and uniformity coefficient 1,3. Filtration rates can be increased four times with only a slight change in the quantity of the effluent.

The Netherlands

REMOVAL OF TRACE ELEMENTS

Storing of surface water is beneficial for the removal of trace elements. E.D. Greef reports in Hydrobiological Bulletin 1976, 10, No. 3, 155-163 on reductions obtained to 5 and 10 micrograms per litre of lead and copper in a storage reservoir of 150 days retention time, whereas in the original Rhine water 50 and 30 ug. per litre respectively were recorded.

Switzerland

REVERSE OSMOSIS REVIEW

J. Sigmond gives in Elsevier Sequoia Patent Report No. 12, Lausanne, 1975 a 70-page review of patents and patent applications on reverse osmosis issued from 1961 to 1975 in the Federal Republic of Germany and in Great Britain. They refer to reverse osmosis and electrodialysis apparatus and processes, membranes and membrane support.

United Kingdom

COURSE IN DESALINATION

A course from 2 to 14 April 1978 in "Desalination, theory and practice", organized by the British Council and the University of Glasgow is designed to acquaint the student with the science, technology and practice of various methods of desalination and their contribution to water resources and management. Information can be obtained from the Director Courses Department, the British Council, 65 Davies Street, London W1Y 2AA.

USA

FLOTATION FILTRATION

T.G. McTighe and C. Lind describe in Public Works 1977, 108, No. 2, 54-56 a process for treating low turbidity water in which the sludge blanket in an upflow clarifier is converted into a "flotation prefilter" by using a combination of polymeters, clay and alum. The sludge which is manually discharged can be thickened and dewatered.

DETECTION OF SEEPAGE

In an article in the Journal of Research of U.S. Geological Survey, 1977, 5, No. 1, 1-10, I.H. Thomson describes the use of airborne thermal infra-red detectors to observe circulation patterns in a lake and areas of bank seepage, spring discharges, stream inflow and sub-surface discharge.

FAO

SELF-HELP WELLS

The above mentioned paper of the Irrigation and Drainage Section of the Food and Agricultural Organization of the United Nations (FAO) (Via della Terme di Caracalla, 00100 Rome, Italy) gives a review of the methods for well drilling and digging which can be done with local material and by local people rather than using imported technology.

WHO

GLOBAL ACTION TO IMPROVE WATER SUPPLIES

"One of the recommendations of the United Nations Water Conference, which was held in March 1977, was that priority should be given to the provision of safe water supply and sanitation for all by the year 1990. The Conference approved the priority areas for action within the framework of a Plan of Action, outlined the actions to be taken at national level as well as through international cooperation, and made a proposal that 1980-1990 should be designated as the International Drinking Water Supply and Sanitation Decade. Considering these recommendations and WHO's long-standing commitment to the improvement of community water supply and sanitation, the Health Assembly urged Member States to treat this subject as a matter of urgency; to formulate by 1980, within the context of national development policies and plans, programmes to achieve the target by 1990; to implement during the decade 1980-1990 the programmes formulated in the period 1977-1980; and to ensure, by means of periodic inspections of water sources and treatment and distribution facilities and by improving public education programmes in the hygiene of water and wastes, that people consume water of good quality. The Assembly requested the Director-General to collaborate with Member States in the above mentioned activities; to ensure WHO's fullest participation in implementing the Plan of Action and in the actions to be undertaken during the proposed International Drinking Water Supply and Sanitation Decade, in close collaboration with the other parties concerned; strengthen collaboration with multilateral and bilateral agencies and other donors for the provision of resources to Member States in the development of their water supply and sanitation programmes; to study the future organizational, staffing, and budgetary implications for WHO, and the role it should assume in the light of the recommendations of the United Nations Water Conference. (From an article "Towards more and effective technical cooperation", reviewing some of the principal decisions taken by the Thirtieth World Health Assembly in May 1977, WHO Chronicle, 1977, Vol. 31, No. 7, pp. 270).

World Bank

VILLAGE WATER SUPPLY

The great majority of persons in rural areas of the developing world do not have access to a safe and convenient source of water, and where this is available, acceptable sewage disposal facilities are normally lacking. R.J. Saunders and J.J. Warford (1976) examine in Village Water Supply, Economics and Policy in the Developing World a wide range of factors (physical, social and economic) that are involved in improving the adequacy of water supply and sanitation in the coming years. Among the principal topics covered in detail are: the character and extent of the problems connected with water supply and sanitation; the goal of improved health, with specific reference to the relation between water supply and water-borne disease, on the one hand, and social and economic activity on the other; the effects of improved water supply and sanitation on productivity, incomes, rural-to-urban migration, and overall development; problems of, and strategies for programme planning and administration; the special problems of operation and maintenance; the importance of recovering programme costs from beneficiaries. The final chapter contains a summary of the findings of the study and lists a number of recommendations for improving rural water supply and sanitation. Publisher: The John Hopkins University Press, Baltimore, Maryland 21218, U.S.A.

New Publications

Proceedings of the First Desalination Congress of the American Continent, Mexico City, October 1976 (sponsored by the International Desalination & Environmental Association and Comision para el aprovechamiento de aguas salinas), in Desalination, 1977, vols. 19 and 20, pp. 598 and pp. 452.

J.S. Murphy and J.R. Orr, Ozone Chemistry and Technology: a Review of the Literature 1961-1974. Franklin Institute Press, Philadelphia, 1975, pp. 399.

G.J. Giefer, Sources of Information in Water Resources: Annotated Guide to Printed Materials, Water Information Centre Inc., Port Washington N.Y. 1976, pp. 307.

Meetings

Symposium on Water Services- Financial, Engineering and Scientific Planning, London 1-2 December 1977. Information: The Secretary of the Institute of Water Engineers and Scientists, 6-8 Sackville Street, Piccadilly, London W1X 1DD, England.

Seminar on Industrial Wastes, jointly organized by the National Environmental Engineering Research Institute and the Calcutta Metropolitan Development Authority, Calcutta, 8-9 December 1977. Information: Dr. A.K. Basu, Convener, c/o NEERI Zonal Laboratory, 23 R.N. Mukherjee Road, Calcutta 700001, India.

Course on "Water and Waste Engineering for Developing Countries", Loughborough University of Technology, Department of Civil Engineering, Loughborough, April-June 1978. Information: John Pickford, WEDC, Department of Civil Engineering, University of Technology, Loughborough, Leics. LE11 3TU, England.



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newsletter

Newsletter No.80-September 1977

News from IRC

PRACTICAL SOLUTIONS IN DRINKING WATER SUPPLY AND SANITATION

The report on a global workshop on Appropriate Water and Waste Water Treatment Technology for Developing countries held in Voorburg in November 1975 has been published in the IRC Bulletin Series No. 7, 1977. One of the contributions to this workshop was the result of a mail survey, which the International Reference Centre conducted with the purpose of collecting field experience and unpublished data on 'Practical Solutions in Drinking Water Supply and Waste Disposal in Developing Countries'. There is a need for a compilation of information on alternative techniques which are uncomplicated, easy to work with, require less maintenance and can be managed by the local people. They can be non-current techniques, adaptations of existing ones or new developments. Such a compilation would enable engineers to make a selection of the solution which would best suit the social, cultural and economic conditions of the country and the technical level of the available personnel. The mail survey was intended to open up sources of unpublished information. Even though the information received was often complete, it was thought that its dissemination would be of value to engineers in the field and would stimulate further development and activities. The first compilation is now available. It is hoped that its publication will evoke comments and that more detailed and new information will be reported back to the International Reference Centre, so that a more complete document can be issued in due course. Information: International Reference Centre, P.O.Box 140, 2260 AC Leidschendam, The Netherlands.

UNICEF

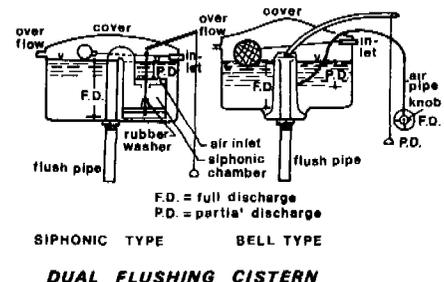
VILLAGE WATER SYSTEMS

"Village Water Systems" by Carl R. Johnson is a technical manual, which contains standards and procedures for the design of water supply systems in rural areas of Nepal and Bhutan. While some parts may be particularly suited to the remote hill and mountain regions of Nepal, it contains much practical information, which is of a more general application. The manual (second revised publication, May 1976) is available on request from UNICEF, Box 1187, Kathmandu, Nepal.

India

WATER CONSERVATION

P. Khanna et al. report in the Journal of Indian Water Works Association, vol. IX, April-June 1977, No.2, p. 150, on the use of dual flushing cisterns for water conservation in residential houses in which urinals are not provided and discharge of full capacity of flushing tanks into the watercloset would be a wastage. In the "siphonic type" cisterns a provision is made to break the siphon by pulling a chain and allowing air to enter it when part of the water is discharged. For full discharge the air is prevented from entering by pulling a washer to close the opening. In the "bell type" cistern fractional discharge is obtained by allowing air to enter through a rubber tubing which is connected to a hole in the bell. The cistern gives full discharge when the air cock is closed. Information: IWWA, Champak 78, Shivaji Park, Bombay 400 028, India.



United Kingdom

INFORMATION FOR THE WATER INDUSTRY

The papers and proceedings of the WRC Conference of March 1976 on "Information for the Water Industry" are now available. The 18 papers were presented at 4 sessions dealing with the needs of users of published information; information work in action; water information worldwide; and developments in information handling. Price £ 10. Orders should be addressed to: Water Research Centre, Medmenham Laboratory, P.O.Box 16, Medmenham, Marlow, Bucks SL7 2HD.

United Kingdom

FUTURE DEVELOPMENTS IN WATER AND SEWAGE TREATMENT

The proceedings of the Symposium on "Future Developments in Water and Sewage Treatment", held in London, England on the 1st and 2nd December 1976, are available from the Institution of Water Engineers and Scientists, 6-8 Sackville Street, London W1X 1DD, England. Developments in water and sewage treatment must keep pace with the need to provide an increasing supply of water of appropriate quality to meet the growing demands of population, industry, and agriculture. In future, sewage treatment may have to be modified to meet stricter standards, so that more surface waters can be treated for potable supply. In turn, water treatment methods may have to be modified to comply with more stringent standards. The treatment of both sewage and water is obviously interconnected and any future advances and changes must be viewed within the constraints of the prevailing economic climate. The proceedings discuss changes that may occur in the next few years from the operational, research, and design aspects of water and sewage treatment. Price: £ 10,- Information: IWES, 6-8 Sackville Street. London W1X 1DD, England.

U.S.A.

REDUCTION OF HYDRAULIC GRADIENT

The Metropolitan Water District of Southern California has designed pressure-control structures using multi-jet sleeve valves to reduce heads from as high as 150 m water in a main supply line to operating conditions. In testing the performance the valves have proved themselves to be dependable and very versatile in meeting most design and hydraulic conditions, also in meeting design parameters of cavitation-free operation and low noise and vibration levels.

Reference: W.W. Watson, "The evolution of the multi-jet sleeve valve", Journal of the American Water Works Association, 1977, 69 332-335.

VIRUSES IN WATER SUPPLY

In comparison with information concerning bacterial contamination of water supplies, much less is known about viruses in water because few water systems determine the presence of viral pollutants in their supplies. Although various techniques exist for delineating the presence of viruses. A summary of the advantages and disadvantages of the various techniques is given along with the recommendations of the American Public Health Association (1974) concerning detection and control of waterborne viruses by J.D. Fenters and J.M. Reed in an article entitled "Journal of the American Water Works Association", 1977, 69 328-331 (See also AWWA Publications)

GRANULAR ACTIVATED CARBON

A recent AWWA Committee report (JAWWA, May 1977) indicated that in dealing with odor problems in water, powdered activated carbon has most commonly been selected. Major advantages are lower price than granular carbon and that the powder can simply be fed in existing basins for good contact. Granular activated carbon is being used more now due to its easy process control, the regeneration possibility and to its excellent capacities to remove many undesirable organic substances. The state of the art of granular activated carbon filtration is reviewed by J.J. Mc Creary and V.L. Snoeyink in the Journal of the American Water Works Association, 1977, 69, 437-444, (39 references). (see also AWWA Publications)

AWWA PUBLICATIONS

- Safety Practices for Water Utilities, 3rd edition, AWWA No. 30003. Price \$ 7.-
- Water Distribution Operator Training Handbook, AWWA No. 20103. Price \$ 12.-
- Fluoridation Principles and Practice, AWWA No. 30004. Price \$ 8.- The above publications can be ordered from AWWA Publications Order Department, 6666 W. Quincy Ave., Denver Colorado 80235, USA

Meetings

Advanced course on "Management of Water and Waste Water Resources", Birmingham, 9 January - 5 May 1978.

Information: Development Administration Group, Institute of Local Government Studies, University of Birmingham, B15 2TT, England.

16th Congress of the Inter-American Association of Sanitary and Environmental Engineering AIDIS, Santo Domingo, 19 - 24 February 1978.

Themes: Evaluation of the Successes of Sanitation Engineering, their Contribution to Social and Economic Development; Institutional Development of AIDIS; Technological Advances; Sanitation and Protection of the Environment in the Hemisphere.

Information: Comité Organizador XVI Congreso AIDIS, c/o José Contreras No. 15, Apartado 88 - 2 "Feria", Santo Domingo, Dominican Republic.



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newsletter

Newsletter No. 81 - October 1977

Sudan

TRADITIONAL WATER TREATMENT

In attempts to clarify turbid Nile water (suspended in the flood season) the local population use rauwäg and various plant materials. Rauwäg, a kind of clay found along the river, consists mainly of montmorillonite and quartz and additional components including feldspar. Addition of rauwäg in the order of 1,5 - 2 g per litre was found to optimally clarify turbid water with 2000 mg/litre suspended solids. There is also evidence that rauwäg treatment reduces the E.coli count. Plant material for clarification can also impart odour to the water. Moringa oliefera seeds applied in quantities of ½ seed per litre of water gave clear water after 3 hours of settling, and no odour was observed after 24 hours. Year-long rainwater storage in a hole in Tibaldi trees was also reported; bactericidal substance was thought to leach into the water, which preserved its quality. Information: Samia al Azharia Jahn. The National Council for Research, Water Purification Project, P.O. Box 2681, Khartoum, Sudan.

United Kingdom

HAND PUMP MAINTENANCE

A clear analysis of the relationship between technology and social organization in the context of community well projects is presented in the publication Hand Pump Maintenance, an Oxfam document compiled by Arnold Pacey. This very useful study (38 pp.) is based on practical experience described by field experts, rather than on sociological theory. Three strategies for organizing hand pump maintenance are put forward. First published by Oxfam under the title Hand Pump Maintenance and the Objectives of Community Well Projects (October 1976), this edition has been published by Intermediate Technology Publications Ltd., 9 King Street, London WC2E 8HN, United Kingdom. Price: £ 1.44.

WATER AND WASTE PROBLEMS IN HOT CLIMATES

Problems associated with water and wastes in tropical developing countries have many aspects. In a book on Water, Wastes and Health in Hot Climates, edited by R. Feachem, M. McGarry and D. Mara (J. Wiley and Sons, 1977, 399 pp., £ 10.75) they are dealt with by authors of many disciplines, including public health engineers, medical hygienists, zoologists, economists, geographers and behavioral scientists. To combat the far from adequate situation with regard to water supply and sanitation in tropical developing countries, original and innovative research and approaches are needed. The book is intended to present current work along these lines although some are yet unproven by practical application and may prove controversial. The main chapters are Health and Water Quality, Water Supplies for Low Income Communities, Institutional Development, Sanitation, and Effluent Re-use and Reclamation.

DROUGHT SITUATION AND REMEDIAL MEASURES

Exceptionally low rainfall caused the worst drought period during May 1975 to August 1976 ever recorded in England and Wales. In order not to lose the benefit of valuable experiences gained, the Institution of Water Engineers and Scientists has collaborated with the Institution of Civil Engineers in organizing a seminar on March 29, 1977 on the operational aspects of the drought of 1975-76. The seminar was intended to bring together the experiences of many disciplines concerned with the water cycle.

U.S.A.

INSTRUMENTATION AND AUTOMATION

During the annual conference of the American Water Works Association in Denver in June 1976, a seminar was organized on Water plant instrumentation and automation. The proceedings contain 29 papers which were presented. They deal with sensing equipment, measurement techniques, control systems, and automation. Information: the American Water Works Association, 666 West Quincy Avenue, Denver, Colorado 80235, U.S.A.

VIRUSES IN WATER

Public Health Aspects of Viruses in Water (1977, Vol. 6) contains brief summaries of current work in the field of viruses in water in institutes in Australia, Brazil, Canada, Federal Republic of Germany, France, India, Israel, Netherlands, Peru, Senegal, South Africa, United Kingdom and USA. Information: Dr. N.A. Clarke, Director Laboratory Studies Division, Environmental Protection Agency, Environmental Research Agency Centre, Health Effects Research Laboratory, 26 W. St. Clair Street, Cincinnati, Ohio 45268, U.S.A.

NON-PROFIT ORGANIZATIONS

In a paper for the United Nations Water Conference, entitled Water Resources Development, M. Dulancey describes the role and experience of U.S. non-profit organizations in providing water to rural people. Some 70 organizations, many of them church-related, have village water projects in developing countries. Through water supply projects the organizations focus their activity on the people who most require help and involve them in the process of development. Non-governmental organizations can also help to match appropriate technology to local conditions. Recognized weaknesses are that there may be inadequate coordination and communication with other development agencies. The agencies may also fail to fit into government water programmes and often lack technical expertise. Improvement in these areas are recommended. Information: American Council of Voluntary Agencies for Foreign Service Inc., Technical Assistance Clearing House, 200 Park Avenue South, New York, N.Y. 10003, U.S.A.

WATER WELL DRILLING

A one-year field orientation course on Water Well Drilling Technology is being offered with a programme on how to set up and operate well drilling machines, maintain and repair the drilling equipment, geologic considerations, groundwater location and quality, pumping techniques, and equipment. Information: K.E. Moehrl, Director of Water Well Drilling, J. Sergeant Reynolds Community College, P.O. Box 6935, Richmond, Virginia 23230, U.S.A. Correspondence courses on Introduction to Water Well Drilling and Water Well Technology are given by the National Water Well Association, 500 West Wilson Bridge Road, Suite 135, Worthington, Ohio 43085, U.S.A.

New Publications

F. Flinthoff. Management of Solid Wastes in Developing Countries, New Delhi, World Health Organization, 1976, 245 pp. (WHO Regional Publications, South-East Asia Series No. 1.). Price Sw.fr. 20, including surface postage. Available from the WHO Regional Office for South-East Asia, World Health House, Indraprastha Estate, Ring Road, New Delhi 1, India. The publication is intended to provide a reference source for engineers, municipal officers, administrators and other interested persons, and to fill a need for a training manual in a field of universal and growing importance. The publication aims at illustrating the concept of the application of technology, appropriate to developing countries, while still meeting the needs of public health.

Slow Sand Filtration for Community Water Supply in Developing Countries. A selected and annotated bibliography. Voorburg, (The Hague), 1977, 50 pp. (IRC Bulletin Series No. 9). Order from International Reference Centre for Community Water Supply, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

Automation in Sewage Work, Sewage Systems, Water Treatment and Supply, and the Treatment of Trade Waste Waters. An annotated bibliography covering the period 1960-77. Published by the Water Research Centre, Medmenham Laboratory, P.O. Box 16, Medmenham, Marlow, Bucks SL7 2HD, United Kingdom.

R.E. Loewenthal and G.v.R. Marais. Carbonate Chemistry or Adequate Systems: Theory and application Ann Arbor, Michigan, Ann Arbor Science, 1976, 43 pp. This book, oriented to engineers and chemists, deals with both theoretical and practical aspects of the equilibrium chemistry of the Ca-Mg-Carbonic system in terrestrial waters. This system plays a dominant role in softening and stabilizing water supplies and so an understanding of its behavioral characteristics may help to improve the design, operation and control of water treatment processes.

Meetings

Third World Congress on Water Resources

Sao Paulo, June 2-7, 1978

Information: Secretary International Water Resources Association, Brazilian Committee, P.O. Box 9721, Sao Paulo, Brazil.

International Conference on Developments in Land Methods of Waste Water Treatment and Utilization
Melbourne, October 23-27, 1978

Information: International Association on Water Pollution Research, Conference Secretary, Melbourne and Metropolitan Board of Works, P.O. Box 4342, Melbourne 3001, Australia.



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newsletter

Newsletter No. 82 - November 1977

Australia

CORROSION OF BORE HOLE PUMPS

Guidelines for the Selection of Turbine Pump Materials for Use in Groundwater are published in Technical Paper No. 14 of the Australian Water Resources Council (Department of Environment, P.O. Box 1937, Canberra City ACT 2601). The author discusses the properties of water effecting corrosion and the use of three major indicators of corrosion, the Langelier Saturation Index, pH and chloride-to-carbonate ratio. The study covered also corrosion tests on six materials which could be alternatives for the construction of pump components.

Bangladesh

DIARRHOEAL MORBIDITY AND WATER USAGE

A survey in Rural Bangladesh on Diarrhoeal Morbidity, Water Usage and Related Factors, June 1977, published by UNICEF, Dacca, is the title of a first report on a WHO/UNICEF survey in 120 villages by J.D. Skoda, B.J. Mendis and M. Chia. Among the conclusions are: Tube well water seems to be a significant factor for better health; urban influence/high population density is related to high diarrhoeal morbidity and there is a great need for intensified preventive measures in city fringe areas; children in the 1 to 10 years age group have more diarrhoea than other ages, reflecting the need for more health education to this group; diarrhoeal morbidity could be lowered if more people would use tube well water for bathing, cooking and washing utensils. An urgent need for more education and better maintenance exists, on which the Department of Public Health Engineering and UNICEF are working.

New Hebrides

LOW-COST WATER TANKS

Collection and storage of rainwater is of vital importance in the South Pacific. Galvanised iron tanks are subject to high freight costs and corrode so heavily that they last three to four years only. For concrete tanks the cost of mould or former would be too expensive. The construction of low-cost ferro-cement underground and above-ground tanks, suitable for collecting rainwater from the roof of a public building was described by K.C. Kalvert and R.J. Binning in an article in Appropriate Technology, Vol.4, No.3, November 1977, entitled Low Cost Water Tanks in the Pacific Islands, (pp 29-30). In principle coats of a 3:1 or 2:1 sand cement soupy mixture are applied with three layers of 2 inch (5 cm.) wire mesh as reinforcement to build a wall of 1½ inch to 2 inch thickness. For the top dome extra ¼ inch to ½ inch (0,63 cm. to 1,27 cm.) steel rods are required. For the underground tank, formation of the tank walls is directly on the walls of the dug hole; for an above-ground tank a circular wall is woven from local material like bamboo. Materials for this self-help underground tank of 20 m³ capacity cost US \$250. An above-ground tank costs more.

Nigeria

ENDEMIC GOITRE AND WELL PROGRAMME

A goitre survey made in Northern Nigeria in 1966 revealed that in 2 villages goitre was reported only since the fifties. No evidence was found of any change in nutritional pattern of the inhabitants now that irrigation or canalization of rivers had been implemented. It appeared that prior to 1954 both villages had only used surface water from marshes and ponds; between 1950 and 1960 wells were drilled and consumption changed from the use of surface water to the use of underground well water. Iodine contents of the well waters (0,003 - 0,004 mg/l) and surface water nearby (0,028 mg/l) seem to support the hypothesis that the change of water source was responsible for the appearance of endemic goitre in the area. Information: V. van Amelsfoort, Catholic University Nijmegen, Medical Care Division, Verlengde Groenestraat 75, Nijmegen, the Netherlands.

United Kingdom

REGIONALIZATION OF WATER MANAGEMENT

Based on the revolutionary Water Act 1973, ten water authorities in England and Wales took over the responsibility to develop water resources, to transmit, treat and distribute water supplies, to collect, treat and dispose of waste waters and to control water pollution. In his book Regionalization of Water Management, 1977, Prof. Daniel A. Okun, University of North Carolina (Chapel Hill, USA), traces the history of modern water management in England and Wales and describes the process by which regionalization was introduced and its implementation. The potential of the new management scheme for addressing principles for sound management is examined. Regionalization is expected to meet with increasing demands as a result of the growing population, urban and industrial development and increasing pollution. Publisher: Applied Science Publishers Ltd., Ripple Road, Barking, Essex, United Kingdom, price £ 18.00 or \$ 36.00

U.S.A.

DUAL WATER SUPPLY

Dual supply systems would provide potable water free from trace contaminants, and non-potable biologically safe but not free from trace contaminants, through two distribution systems. In a study supported by the National Science Foundation a system model and a methodology will be developed to analyze the dual supply system for use by cities and regional authorities as an alternative to single supply. The topic was subject of discussion in a seminar on November 4 in West Chester, Pen. Information: Weston Environmental Consultant-Designers, Weston Way, West Chester, Pen. 19380, USA

NEWSLETTER ON LOW-COST BASIC SERVICES

A monthly newsletter, The Urban Edge, is published by the Council for International Urban Liaison, 818 18th Street, N.W. Washington D.C. 20006, as a clearing house for practical experience in low-cost service delivery and employment creation projects in developing countries. In the November issue projects are referred to which make use of simple less expensive technologies for providing basic services. Among the low-cost installations are standpipes, plastic pipes, pit latrines, septic tanks and stabilization ponds.

Peru

MEETING ON PAN AMERICAN NETWORK FOR INFORMATION AND DOCUMENTATION

The Pan American Centre for Sanitary Engineering and Environmental Sciences (CEPIS), Lima, Peru, organized from 14-18 November 1977 a consultation meeting and several working group meetings on the establishment of a Pan American Network for Information and Documentation on Sanitary Engineering and Environmental Sciences (REPIDISCA). The meetings, sponsored by the International Development Research Centre (IDRC, Ottawa, Canada) were attended by representatives of a large number of countries in the Pan American area and of some international organizations. During the initial period of REPIDISCA activity, an emphasis will be put on the exchange of information and documentation on community water supply and sanitation. Information: CEPIS, Los Pinos 259, Urbanización Camacho, Casilla Postal 4337, Lima 100, Peru.

News from WHO

A WHO-sponsored workshop on rural water supply and sanitation; under the auspices of the Ad Hoc Working Group on Rural Water Supply and Sanitation was held in Ouagadougou, Upper Volta; from 6-10 December 1976. It was attended by representatives of 14 African countries and several international organizations. The workshop was intended to investigate the national and regional constraints in improving the sector and to propose ways in which the international society can assist the developing countries to increase their efforts. Main findings of the conference are: the insufficient importance given to sanitation as compared to potable water supply; the inefficient call on local human and material resources; the need for integration of water supply and sanitation projects; the lack of recognition of the identity of sanitation staff; the need for decentralization of construction, maintenance and operation services; the shortage of training facilities and the lack of professional relationships between the sanitary engineers, technicians and inspectors of various countries. Proceedings (in French) were edited by the Environmental Engineering Institute of the Federal Polytechnic School (L'Institut du Génie de l'Environnement de l'Ecole Polytechnique Fédérale de Lausanne) in Lausanne, Switzerland, on behalf of WHO, April 1977.

New Publications

Water Purification in the E.E.C., a state of the art review, Water Research Centre. Published for the Commission of the European Communities by Pergamon Press, Oxford, England, 1977, pp 474.

Inventory of Water Resources Research in Australia 1977, Mail Order Sales, Australian Government Publishing Service, P.O. Box 84, Kingston ACT 2604, Australia. Price A\$6.40 plus postage.



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newsletter

Newsletter No. 83 - December 77

Cameroon

DEVELOPMENT FROM BELOW

The successes and failures of community development schemes over the past few decades have highlighted the fact that lasting results can only be achieved with the active participation of the community itself. In the health sector as in other sectors, working "on" or "for" people is bound to be less fruitful than working with informed, active participants in the development process. In south-central Cameroon, the participative approach was successfully used to organize village health committees. In an article in WHO Chronicle, Vol.31, No.8, pp.307-344, entitled The Village Health Committee - starting point for rural development, R.B. Isely and J.F. Martin describe the successes and setbacks encountered in a project in which such committees were established and put into action. The accomplishments of the committees - latrine construction, water source protection and similar projects - were gratifying in themselves. But equally gratifying was the catalytic effect that community organization seemed to have on other aspects of rural life. The village health committee can serve as a springboard for rural development.

France

PROTECTION OF GROUND WATER

A national colloquium on the Protection of Ground Waters used for Human Consumption was held in Orleans in March 1977. The proceedings have now been published by the Office of Geological and Mining Research (Bureau de Recherches Géologiques et Minières), Orleans 1977, in French. The three volumes deal with external sources of pollution, natural conditions propagating pollution and economic factors. The objective of the conference was to formulate measures required to safeguard the quality of the water for the maintenance of public health and to cope with future needs.

Pakistan

RURAL WATER QUALITY SURVEILLANCE

A preliminary study on the bacteriological quality of drinking water in some villages in the Punjab was carried out by the Institute of Public Health Engineering and Research in collaboration with the Peoples Work Programme, UNICEF and US AID. The study was completed in four months, from April to August 1977. Ponds, open wells, handpumps and piped drinking water supply are the facilities available in rural areas of the Punjab for the supply of drinking water. A total of 201 samples from 26 villages were collected, consisting of 29 samples from open wells, 116 samples from public handpumps and 146 samples from private handpumps. Each sample was tested for the total number of coliforms and the total number of E.coli. In almost all the villages where open wells were monitored the total coliform and E.coli counts were greater than the respective maximum counts for handpumps. The study is reported in Report No.035-01-78, Rural Water Quality Surveillance. Further information: Institute of Public Health Engineering and Research, University of Engineering and Technology, Lahore-31, Pakistan.

United Kingdom

ALGAE REMOVAL FROM PILOT STUDIES

The effectiveness of treatment processes in removing algae has been investigated in pilot plant studies and reported in Technical Report No.TR45, of the Water Research Centre, Medmenham Laboratory, P.O. Box 16, Medmenham, Marlow, Bucks. SL7 2HD, United Kingdom. Some of the findings were: neither microstaining nor upflow/downflow filtration effectively removed the dominant algae, *Synechococcus* sp. (a blue-green alga) and a *Dictyosphaerium*-like green alga. Algae removal was improved by: sedimentation, prechlorination and sedimentation (*Synechococcus* sp. only) and higher coagulant doses with direct filtration. Algae removal was not improved by: an anionic polyelectrolyte and sedimentation and higher coagulant doses with sedimentation/filtration.

ORGANIC COMPOUNDS AND PUBLIC HEALTH

An article entitled Organic Compounds in Drinking Water and Public Health, by M. Fielding and R.F. Packham, published in the Journal of Institution of Water Engineers and Scientists, 1977, Vol.31, No.5, pp.353-375, reviews advances in the knowledge of the nature and significance of organic substances in natural waters and water supplies. Sources of micropollutants and methods of analysis are discussed and data are included on levels of haloforms in U.S.A. and U.K. Much of the paper is devoted to reviewing the techniques for the evaluation of the public health significance. Health aspects of waste water re-use are included. A bibliography of 36 references is appended.

U.S.A.

MAINTENANCE OF ELEVATED TANKS

In an article in the Journal of the American Water Works Association, Vol.69, No.9, September 1977, on the interior maintenance of elevated storage tanks, B. Brotsky refers to the internal protection of elevated storage tanks against corrosion by painting. A proposed revision of the 1964 AWWA Standard D102 on the matter, including external protection, is discussed.

Conferences

Exhibition and International Conference on Water Systems and Applications (ISRAQUA), 1978, 4-8 June, Tel Aviv, Israel. Organized by the Israel Centre of Waterworks Appliances, the Standards Institution of Israel, Ramat Aviv, Israel. Further information: Kenes Ltd., P.O. Box 16271, Tel Aviv, Israel.

International Symposium on Biological Indicators of Water Quality, 12-15 September, 1978, Newcastle-upon-Tyne, United Kingdom. Organized by the Department of Civil Engineering, University of Newcastle-upon-Tyne. Further information and application forms: Miss M. Sanderson, The University, Newcastle-upon-Tyne NE1 7RU, United Kingdom.

A Symposium on Community Water Supply in Development Cooperation was organized from 7-10 February, 1977, in Amsterdam (the Netherlands), under the auspices of the Minister for Development Cooperation of the Netherlands. The symposium was initiated by the Dutch Government in preparation for the United Nations Water Conference that was to take place in Mar del Plata, Argentina, in March 1977. The symposium report reflects the work done in general sessions as well as in working groups on policy and planning, manpower development, organization and management, finance, technology and on motivation. The report is available through the IRC, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

The International Institute for Hydraulic and Environmental Engineering (IHE) in cooperation with the Delft University of Technology and NUFFIC (Netherlands Universities Foundation for International Cooperation) organizes courses at post-graduate level in the fields of Hydraulic and Sanitary Engineering, Hydrology, Port Management and Environmental Science and Technology. The courses are organized annually, from October through to September. Further information: Registrar of the IHE, NUFFIC, P.O. Box 90734, 2509 LS The Hague, the Netherlands.

New Publications

IARC Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Man, Vol.14, Asbestos, International Agency for Research on Cancer, 1977, pp.108. Distributed for IARC by WHO, 1211 Geneva 27, Switzerland. Price: Sw.Fr.14.

AWRC Activities 1976, an (informal) annual report that gives details of the major programmes of the Australian Water Resources Council in 1976, including lists of research projects. A booklet on 1977 is now being compiled. Further information: Department of Natural Resources, P.O. Box 5, Canberra, A.C.T. 2600, Australia.

Guide to Hygiene and Sanitation in Aviation, by J.Bailey. Published by WHO, 1211 Geneva 27, Switzerland, 1977, pp.170. Price: Sw.Fr.28. French and Spanish editions are in preparation.

New Publications of Water Resources, a newsletter listing recent accessions of the Water Resources Research Center, 617 North Main Street, Virginia Blacksburg Va., U.S.A.

Water Supply System Management, 16 papers presented at the Short Term Course sponsored by the Ministry of Work and Housing, New Dehli and organized by the Indian Water Works Association. Further information: Secretary IWWA, Champak 78, Shivaji Park, Bombay 400, India.



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newsletter

Newsletter No.84 - January 1978.

IRC in 1978

Water supply and sanitation have attracted full attention in 1977. The United Nations Water Conference (Mar del Plata, Argentina, March 1977) again underscored the importance of "safe water and basic sanitary facilities for all by 1990" recommending, inter alia, that "the decade 1980-1990 should be designated the International Drinking Water Supply and Sanitation Decade and should be devoted to implementing the national plans for drinking water supply and sanitation". Furthermore, it was stressed that water supply and sanitation is not an isolated, technical problem, but that it has close links with structural and social factors. The implementation of the Decade will need a multi-disciplinary approach, based on specific targets, to be set up by each country, taking into account its social and economic conditions.

Huge efforts will be necessary during the period now started of preparation for the Decade, nationally as well as through regional and international co-operation, efforts to which the IRC will attempt to contribute in the year to come.

The IRC will further concentrate its activities on manpower development, community development (extension, community participation), appropriate technology and elements of programme planning and evaluation. Work started (earlier programmes on slow sand filtration, handpumps, public standposts, etc.) will be continued. Increased attention will be paid to the international exchange and transfer of knowledge and experiences in the field of community water supply and sanitation, in which the Newsletter will continue to play its role. To this end concerted efforts will also be made with the World Health organization to improve and intensify the activity of the WHO network of collaborating centres.

In the time ahead the IRC will attempt to continue its work, bearing in mind the statement made at the United Nations Water Conference that it will not be possible to ensure a better quality of life and to promote human dignity and happiness unless concerted action is taken to find solutions and to apply them.

Against this background, the IRC staff wishes all readers of the Newsletter a happy and prosperous 1978.

Belgium

DROUGHT OF 1976

Southern Belgium, a rural area with a low population density, was badly affected by the exceptional drought of 1976. In a publication entitled The Drought of the Year 1976 in southern Belgium. A Study of the Water Supply for the Population and for Cattle Breeders, E. Jeanfils covers the following points: The effects of the drought, the methods used to minimise them and general or specific proposals designed to eliminate the shortcomings in the water supply. These proposals are examined in the context of a global policy of water resources management and of an environmental policy. There is also a critical analysis of the administrative and legal measures taken during the summer of 1976. The publication (in French, pp.87, 1977) is available from Fondation Universitaire Luxembourgeoise, Arlon, Belgium.

United Arab Emirates

WATER SAVING TOILET

Sewerless excreta disposal has been suggested to reduce water usage in desert areas. In a publication entitled Water Saving Devices for Sanitation by the UN Mission on Housing, Building and Planning to the Arab Emirates, a locally built composting toilet is evaluated in a demonstration unit. Some advantages shown are: water savings of 40m³ per household per year, elimination of a sewer system and the need for waste water treatment, and the production of 30kg, of fertiliser per person per year. Another advantage is the household refuse can be treated by the same method. Further information: UN Mission on Housing, Building and Planning, UNDP, 866 United Nations Plaza New York, N.Y. 10017, U.S.A.

United Kingdom

WATER RESEARCH CENTRE.

The retirement has been announced of Dr. R.G. Allen, Director of the Water Research Centre, on 1 March, 1978. Dr. Allen is widely known, not only as the Head of one of the largest water research organizations in the world but also as an active participant in WHO matters relating to water. He was for a number of years, a member of the WHO Expert Advisory Panel on Environmental Health and was gratified when ~ with the permission of the U.K. Government - the WRC was designated a WHO Collaborating Centre. Since he originally became the Director of the former Water Research Association in 1955, he has made very many friends throughout the world and it is certain that they would all like to wish him a happy retirement. Dr. Allen will be succeeded by Mr. J.L. van der Post.

U.S.A.

SAFETY PRACTICE MANUAL

Manual M3 on Safety Practice for Water Utilities 1977, is a publication of the American Water Works Association. It gives guidelines for safe working practice in water utilities, accident prevention schemes, operation and maintenance and storage and handling of chemicals. The manual is obtainable from the American Water Works Association, 666 W. Quincy Avenue, Denver, Colorado 80235, U.S.A.

News from WHO

WATER AND SANITATION DECADE

Ten-year national development plans for rural and urban water supply and wastes disposal systems were recommended by a working group that met in Manila on 10-15 October, 1977. The group, sponsored jointly by WHO and the Asian Development Bank, considered these plans to be the "most appropriate way" for providing all people with access to a safe water supply by 1990. It would also be in keeping with decisions made at the 1976 Conference on Human Settlements (Habitat) and the 1977 United Nations Water Conference, which had urged that the 1980s be declared the International Drinking Water Supply and Sanitation Decade. The working group further advocated concerted efforts to remove the financial, managerial and technical obstacles to the development of water and sanitation facilities. Fundamental policy changes were now needed for ensuring continuity of funds, strengthening the institutions and manpower, and getting the maximum support from the people, particularly for rural water systems. Countries represented at the meeting were Afghanistan, Bangladesh, Burma, Fiji, Indonesia, Malaysia, Nepal, Pakistan, Papua New Guinea, Philippines, Republic of Korea, and Thailand. Observers were present from the International Bank for Reconstruction and Development, UNICEF and the WHO Regional Office for South-East Asia. (From : WHO Chronicle, 1978, 32, 42 - 43)

New Publications

The Place of Health Education in Health Administration, Report on a Working Group, Manchester, 29 March - 1 April 1976 document ICP/HED W03/6, distributed by the WHO Regional Office for Europe, 8 Scherfissvej, 2100 Copenhagen Ø, Denmark.

The January 1978 issue of Water Quality Bulletin, a publication of the WHO Collaborating Centre on Surface and Ground Water Quality, Canada Centre for Inland Waters, Burlington, Ontario, Canada, contains articles on : Water Quality Management, Water Pollution Prevention and Control in India, the UN Conference on Desertification, Environmental Quality Surveillance in Indonesia, Coastal Pollution in Indonesia, Water Quality Standards in Bangladesh, and Pollution Problems in the Mediterranean Sea.

Meetings

Third World Congress of the International Water Resources Association, Sao Paulo, Brazil, 29 June - 5 July, 1978. Further information : Terceiro Congresso Mundial de Recursos Hidricos, Caixa Postal 9721, Sao Paulo, Brazil.

The Fifth International Exhibition for Waste Water and Waste Technology/Fourth International Symposium on Waste Water and Waste EAS, Munich, Federal Republic of Germany, 8 - 10 June 1978. Further information : EAS Munchener Messe und Ausstellungsgesellschaft mbH, Bereich Kongresszentrum, Tagungsburo EAS, P.O.Box 121009, D-8000 Munich Federal Republic of Germany.

Conference on the Utilisation of Sewage Sludge on Land, Keeble College, Oxford, United Kingdom, 10 - 13 April, 1978. Further information : Conference Organizer, Water Research Centre, Medmenham Laboratory, Henley Road, Medmenham, P.O.Box 16, Marlow, Bucks. SL7 2HD, United Kingdom.



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newsletter

Newsletter No.85 - February 1978

France

NITRATE REMOVAL

A literature survey on the Removal of Nitrate from Potable Water, by L. Levesque, has been published by the Association Française pour l'Etude des Eaux, Paris, 1976, 158 pp., (in French). The processes available for nitrate removal are reviewed and the effectiveness of each, its applicability to the treatment of potable water supplies and the costs involved are considered. A most promising proposal is ion exchange with nitrate selective resins.

India

SLOW SAND FILTRATION

Slow Sand Filtration - Project Report Phase I, published by the National Environmental Engineering Institute (NEERI), Nagpur, India, 1977, presents the results of the programme of activities in India for Phase I of the IRC International Research and Demonstration Project on Slow Sand Filtration. Part I of the report gives a comprehensive review of pilot-scale experiments that were conducted to study the effect of different rates of filtration, shaking, discontinuous operation, high levels of pollution in raw water and the use of builders' grade sand, on the performance of slow sand filters. Based on the results of these studies main design criteria for slow sand filters for small community water supplies are summarized. A typical design for such a scheme is included in the report. Part II describes a field study on the performance and management of the Slow Sand Filtration Plant at Umrer, Maharashtra, India. Information is given on the physical and bacteriological efficiency of the filters, on the operation and maintenance and financial management of the scheme, as well as on the consumers' opinion of the water supply and the impact on the health status of the community. Part III summarizes the main features of 187 slow sand filter installations in India. A statistical analysis of this information is given. Additional details regarding this report which contains valuable information for all those concerned with rural water supply can be obtained from Dr. B.B. Sundaresan, Director NEERI, Nehru Marg, Nagpur 440 020, India.

News from WHO

LEAD AND NITRATES IN DRINKING WATER

The concept of health hazard, the development of criteria documents and the formulation of standards for lead and nitrates in water were the main topics of discussion at a Working Group meeting in London from 26-30 September, 1977. The meeting was sponsored by the WHO Regional Office for Europe and the Government of the United Kingdom and brought together 20 experts from 10 European countries, as well as officials from the European Economic Community. Resulting from the meeting, it was agreed that: the upper limit for lead in running water should be 0.05mg per litre; if the lead content frequently exceeds 0.1mg per litre, the exposure of consumers to the lead in this water should be reduced; when lead pipes are present, the drinking of water from household water softeners and hot water systems should be discouraged. As regards the nitrate level in water, the working group agreed that for the general population a level of below 50mg per litre should be considered as acceptable, and those in excess of 100mg per litre as unacceptable. For infants under 6 months old, nitrate levels in excess of 50mg per litre must be considered as unacceptable. Several important subjects for further research on lead and on nitrates relating to their presence in water were recommended. (Adapted from WHO Chronicle, 1978, Vol.32, No.1, p.41).

TECHNICAL COOPERATION AMONG DEVELOPING COUNTRIES (TCDC)

The report on technical cooperation among developing countries (unpublished document EB60/7), submitted by the Director-General of WHO to the sixtieth session of the WHO Executive Board in May 1977, reviews the policy background of technical cooperation among developing countries. The earlier concept of technical assistance or aid with its donor/recipient relationship has been replaced by the new concept of technical cooperation, to which WHO is committed. This includes the fostering of cooperation among developing countries themselves. An example of this is the development of a network of collaborating centres for the transfer of appropriate technology in community water supply and waste disposal. In preparation for the United Nations Conference on Technical Cooperation among Developing Countries, due to take place in Buenos Aires from 30 August-12 September, 1978, TCDC focal points have been set up in regional offices and a central point designated in the Regional Office for the Americas/Pan American Sanitary Bureau. These focal points will serve to promote the application of TCDC in WHO programmes. TCDC has a major role in encouraging local capacity and in promoting low-cost technology in the developing countries themselves.

Publications

CHARGING STRUCTURES FOR THE WATER SERVICES

The papers and proceedings of the Water Research Centre Seminar on The Economics of Charging Structures for the Water Services, held on 5 and 6 July, 1977 in Oxford, are now available. The ten papers were presented at 4 sessions dealing respectively with charging principles for water supply; charging for direct abstraction; charging principles for effluents and sewage; and charging for direct discharges. They are available from the Water Research Centre, Medmenham Laboratory, P.O. Box 16, Marlow, Bucks. SL7 2HD, United Kingdom, price £3.00.

RESOURCES-NEEDS-PROBLEMS

Resources-needs-problems, an assessment of the World Water Situation by 2000, by Lennart de Maré, Department of Water Resources Engineering, University of Lund, 1976, 53 pp., references, tables. Further information: University of Lund, Fack 725, S-22007 Lund, Sweden.

Planning and Design of Rural Drinking Water Projects, by N. Imboden, Head of Research on the impact of rural water supply with the Organization for Economic Cooperation and Development (OECD, Experiences in Rural Development, Occasional Paper No.2, September 1977, 51pp. plus annexes). This publication discusses the various types of analyses that can be executed in the field of rural water supply. Different types of impact studies are rejected, whilst process or implementation studies are proposed. The paper opts for a comparative analysis of drinking water schemes rather than for in-depth case studies. A number of hypotheses are proposed, based on existing analyses of rural water supply projects and programmes. The necessary information to test the hypotheses has been identified. Further information: OECD Development Centre, 94 Rue Chardon-Leyache, 75016 Paris 16, France.

Meetings

Videotape course and workshop on Water Resources Management: A Systems Approach, Fort Collins, U.S.A., 5-14 July, 1978. Computer workshop in Statistical Hydrology, Fort Collins, U.S.A., 17-21 July, 1978. Further information on both workshops (sponsored by the American Society of Civil Engineers): Colorado State University, Engineering Research Center, Fort Collins, Colorado 80523, U.S.A.

IAWPR Specialized Conference on Aeration, organized by the Netherlands National Committee of the International Association on Water Pollution Research, Amsterdam, the Netherlands, 19-22 September, 1978. Further information: Expo Travel and Conference BV, Waalhaven Z.Z.44, 3088 HJ Rotterdam, the Netherlands.

Symposium on Engineering, Science and Medicine in the Prevention of Tropical Water-Related Diseases, London, 12-14 December, 1978. Organized by the Royal Society of Tropical Medicine and Hygiene, International Association on Water Pollution Research and the Institution of Civil Engineers. Further information: Tropical Symposium Organizer, Institution of Civil Engineers, Great George Street, Westminster, London SW1P 3AA, United Kingdom.



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newsletter

Newsletter No.86 - March 1978

People's Republic of China

USE OF HUMAN AND AGRICULTURAL WASTES

In Compost, Fertilizer and Biogas Production from Human and Farm Wastes in the People's Republic of China, the editors Michael G. McGarry and Jill Stainforth, have brought together a collection of papers describing the design, construction, maintenance and operation of Chinese technologies concerning the treatment of human excreta, livestock manure and farm wastes for the production of liquid fertilizer, compost and methane gas. The papers have been published by the International Development Research Centre following an increased number of enquiries on the subject of Chinese practices and experiences in the production of biogas, use of excreta and use of compost. They are translated by Lee Thim Loi from A Compilation of Data on the Experience and Sanitary Management of Excreta and Urine in the Village, published by The People's Hygiene Publisher, People's Republic of China. Further information: International Development Research Centre, P.O. Box 8500, Ottawa, Canada K1G 3H9.

Tanzania

WINDMILL FOR PUMPING WATER

Volunteers in Asia, together with Vita, have published a manual on the construction, assembly and operation of a windmill for pumping water. The machine is light-weight and highly responsive to change in wind direction. It is made of commonly available metal and pipe ~~material and does not require any sophisticated metal working skills or equipment.~~ The windmill was designed and reported to be tested in Arusha, Tanzania. It costs approximately 1/6 to 1/10 the price of an imported windmill with an equivalent capacity. The manual entitled The Arusha Windmill, a construction manual (1977), is written by Dick Stanley and edited by Ken Darrow. Available from Appropriate Technology Project, Volunteers in Asia, Box 4543, Stanford, CA 94305, U.S.A.

U.S.S.R.

INSTITUTE FOR WATER SUPPLY AND WATER PURIFICATION

The Research Institute for Community Water Supply and Water Treatment operates under the K.D. Pamfilov Academy of Community Services. It has recently developed certain equipment and package-type units for water treatment and disinfection with a capacity of up to 800 cubic metres per day. This equipment is simple and reliable and poses only a minor problem of operation and maintenance. It is now in mass production and is intended also for export to tropical countries. For disinfection of a small rural water supply, a system has been developed based on the electrolysis of sodium chloride. For waste treatment, package plants have been developed for the biological treatment of waste waters with a capacity of up to 700 cubic metres per day. The Institute is a WHO Collaborating Centre for Community Water Supply and Wastes Disposal. Further information: Research Institute for Community Water Supply and Water Treatment, K.D. Pamfilov Academy of Community Services, Volokolamskoye Shosse 87, Moscow 123373, U.S.S.R.

WORLD WATER RESOURCES

In an analysis of the present state of world water resources and forecasts for the year 2000, Mark I. Lvovitch warns against the increasing wastewater flow. It is estimated that 40% of the world's stable runoff resources are at present used to reduce the concentration of contaminants in waste disposal. It is also estimated that even though treatment techniques will be more refined, the degree of river pollution will have increased threefold by the end of the century. Solutions to the problem should be based on the reduction or even cessation of the dumping of wastewaters into rivers and lakes, as water once polluted, should be treated. Although such measures are now being implemented, they need a much more wide application. Reference: M.I. Lvovitch, World Water Resources, Present and Future, *Ambio*, 1977, Vol.6, No.1, pp.13-21.

United Kingdom

WATER LAW AND ADMINISTRATION

The National Water Council is organising a seminar on the role of Water Law and Administration for Developing Countries, from 9-21 October, 1978. The seminar is a first step in a programme designed to help developing countries with their own problems regarding water legislation and related fields. The programme will cover all aspects of water management, such as: water rights, water supply, water resources and conservation, flood relief and coast defence, irrigation, pollution control, fisheries, etc. Further information: National Water Council, Training Division, Tadley Court, Tadley Common Road, Nr. Basingstoke, Hants. RG26 6TB, United Kingdom.

News from WHO

Water Resources Development and Health, (WHO document MPD/76.6 and addendum MPD/77.7), is a selected bibliography on the effects of water resources development projects, such as man-made lakes, irrigation networks, etc., on health in the widest sense. It also attempts to include published material on other fields which might be relevant to water resources development, as well as general background information. The bibliography, which lists more than 850 references, is not annotated. Further information: Division of Malaria and Other Parasitic Diseases, World Health Organization, 1211 Geneva 27, Switzerland.

Meetings

What Price Water: 1978 Annual Conference and Exposition of the American Water Works Association, 25-30 June, 1978, Atlantic City, U.S.A. Further information: American Water Works Association, 666 W. Quincy Avenue, Denver, Colorado 80235, U.S.A.

Oxidation Techniques in Drinking Water Treatment, 11-13 September, 1978, Karlsruhe, Federal Republic of Germany. Further information: DVGW-Forschungsstelle am Engler-Bunte-Institut der Universität Karlsruhe, Wasserchemie, Richard-Willstätter-Allee 5, D-7500 Karlsruhe, Federal Republic of Germany.

New Publication

The feasibility of using wood handles for hand pumps was investigated in a laboratory study on the behaviour of metal/wood interfaces. Eight wood handles with simple pivots were subjected to oscillating motion with a load of 150lbs., (simulating the operation of a hand pump). The results, after 2 million cycles, indicate that: (1) woods impregnated with oil are more durable than dry ones, (2) galvanized pipe pivots function well and (3) hardwoods are more durable than soft woods. A design technique for determining the required dimension of a hand pump handle based on the type of wood, load and level of hand pump usage intensity is presented. The study is reported in a paper issued by the Public Utilities Department of the International Bank for Reconstruction and Development (World Bank); P.U. Report No. RES 13, 22 February, 1978. Further information: Yaron M. Sternberg, International Rural Water Resources Development Laboratory, University of Maryland, College of Engineering, College Park, Maryland 20742, U.S.A.

Proceedings of the Fourth Annual Conference of the California Association of Reclamation Entities of Water - Water Conservation Reuse in the Drought (Watercare). Further information: WATERCARE, 5750 Almaden Expressway, San José, California 95118, U.S.A.



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newsletter

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U.S.A.

AID TO COMPUTATION

Many basic computations inherent to water resources engineering can be solved with the use of programmable pocket calculators. The Iowa Institute of Hydraulic Engineering has brought together 870 programmes for these computations, with user instructions for eleven machines, in a manual entitled, Hydrologic and Hydraulic Computations on Small Programmable Calculators. Programmes are given for: hydraulic and hydrologic routing methods, well hydraulics for unsteady and steady radial flow, water surface profile computations, turbulent pipe flow, pipe network analysis, etc. Further information: The Iowa Institute of Hydraulic Research, University of Iowa, Iowa City, Iowa 52242, U.S.A.

SMALL DAM DESIGN

Low-cost earth dams can be very useful in the conservation of water in small reservoirs. However, failures have been reported in many cases due to improper construction and poor design. In the Design of Small Water Storage and Erosion Control Dams, A.D. Wood and E.V. Richardson present design criteria and construction methods applied for small earth and rock filled dams. The materials and methods to be used are considered for both mechanical and manual labour. Several types of ponds, foundation conditions, and water uses are discussed as design considerations. Special attention is given to the selection of appropriate outlet works and spillways. The construction of earth embankments is quite dependent on available materials, however, placement of water barriers and drains allows some flexibility in the cross section design. An appendix is included to address the problem of seepage and its influence on design. Further information: Department of Civil Engineering, Colorado State University, Colorado, U.S.A.

LEACHING OF VINYL CHLORIDE INTO WATER

Polyvinyl chloride pipes are being used extensively in distribution systems in developing countries. Recently, concern has been raised that unpolymerised vinyl-chloride (V.C.) in the pipes can migrate into the water flowing through them. R.C. Dressman and E.F. McFarrar describe a field study of the V.C. concentration in the water of five distribution systems utilising PVC pipe, in an article entitled Determination of Vinylchloride Migration from Polyvinyl Chloride Pipe into Water in the Journal of the American Water Works Association, (Jan. 78, I, p. 29-30). Concentrations ranging from 0,03 to 1,4 micrograms have been found. The low concentration persists in a system which is nine years old and the high concentration persists in the newest system. These levels are well below those that have thus far been associated with a carcinogenic response in animals.

News from IRC

High iron content of water from boreholes and wells, represents a problem which is encountered in many developing countries. Excessive amounts of iron in water imparts a metallic taste and precipitates can cause colouration rendering the water objectionable for domestic use. Even though the presence of high iron content does not affect the hygienic quality of water, it causes nuisance and impairs the acceptability. There is widespread interest in iron removal plants using ground water for village water supplies in rural areas. An interesting example of such groundwater treatment plant for iron removal has been developed under the auspices of the Tamil Nadu Water Supply and Drainage Board, in Madras, India. Both a hand pump operated unit and a larger size one operated with electrical pumps were designed and built. They are being tested at demonstration sites near Madras. Readers having experience with iron removal plant are invited to communicate their information to the IRC. Descriptions of operating plants and illustrative material would be very much appreciated.
Contact: IRC, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

News from WHO

Management of Solid Wastes in Developing Countries, by Frank Flintoff. This publication was prepared under the sponsorship of the Government of India and is available from the WHO Regional Office for South-East Asia, World Health House, Indraprastha Estate, Ring Road, New Delhi-110002, India. (South-East Asia Series No. 1, 244 pages, 1976, price Sfr.20.-).

New Publications

L'Association Francaise pour l'Etude des Eaux has published a bibliography on Individual Sanitation and Treatment Works for Small Communities. Some of the chapters are: Legislation on Wastewater Purification, Wastewater Disposal into the Natural Environment, Purification Stations (Pavillions), Conventional Purification Stations, Operation and Maintenance of Stations, Cost of Small Purification Stations. Further information: L'Association pour l'Etude des Eaux, Paris 38666-61, France.

Hand Dug Wells and their Construction, by S.B.Watt and W.E.Wood. This manual is intended as a guide to the hand digging of wells, especially village wells in tropical or subtropical areas, where cost has to be kept to a minimum and the villagers themselves are able and willing to contribute the labour required. The methods described combine traditional principles with modern techniques. Further information: Intermediate Technology Publications Ltd., 9 King Street, London WC2E 8HN, United Kingdom. (234 pages, cost £5.00)

The Ross Institute of Tropical Hygiene, part of the London School of Hygiene and Tropical Medicine has published two new editions in their Technical Bulletin Series: Small Excreta Disposal Systems (Bulletin No.8) and Small Water Supplies (Bulletin No. 10). Both publications are written by Richard Feachem and Sandy Cairncross and are suitable for readers with at least a secondary school education, not necessarily of a technical nature. Bulletin No.8 makes clear the range of technologies available for excreta disposal in small communities and describes each system in simple terms. Bulletin No. 10 is aimed at those who wish to build a few supply systems using simple techniques and readily available equipment. A section on water treatment in the home is included. In both publications the authors have tried to emphasize techniques which have been tested in the field. Lists of the most useful references on the subjects are included in the respective bulletins. Further information: The Publications Secretary, Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, Keppel Street (Gower Street), London WC1E 7HT, United Kingdom.

Meetings

Groundwater Exploration in Hard Rocks was the subject of a recent International Seminar in Stockholm, Sweden and Cagliari, Sardinia, Italy, 22 September - 7 October, 1977. The seminar concentrated on exploration for water resources in hard rocks and the technology for their utilization. Further information: Department of Land Improvement, The Royal Institute of Technology, Stockholm, Sweden, or the Faculty of Engineering, University of Cagliari, Sardinia. Both institutions jointly sponsored the seminar.



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JAPAN

DESALINATION AND WATER RE-USE

An International Congress on Desalination and Water Re-use was held in Tokyo, Japan, between 27 November - 3 December, 1977. The Congress was sponsored jointly by the International Desalination and Environmental Association (IDEA) and Japan's Water Re-Use Promotion Center and attracted 500 participants from over 25 countries. The theme of the Congress was New Water for World Prosperity and the technical sessions dealt with desalination aspects and water re-use as a viable resource. The Congress Proceedings are published by Elsevier Publishing Company, P.O. Box 330, Amsterdam, The Netherlands; they will also appear in future issues of "Desalination" (by the same publisher).

U.S.A.

ALTERNATIVE CHEMICALS FOR DISINFECTION

Chlorine has been most commonly used in the disinfection of drinking water. The formation of carcinogenic halogenated organics which have adverse effects on health has recently caused a review of the subject of disinfection and a search for alternatives. Ozone, Chlorine Dioxide, and Chloramines as Alternatives to Chlorine for Disinfection of Drinking Water, is a state-of-the-art report of a current study by the Water Supply Research Division of the Office of Research and Development of the U.S. Environmental Protection Agency. The three alternative disinfectants, already used in many places, have been demonstrated as a suitable replacement for chlorine. The report also gives an overview of the existing generation technology. Further information: Water Supply Research Division, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268, U.S.A.

News from the IRC

SEMINAR PAPERS ON COMMUNITY WATER SUPPLY IN DEVELOPING COUNTRIES

The International Reference Centre for Community Water Supply organized an International Training Seminar on Community Water Supply in Developing Countries in Amsterdam from 6 - 10 September, 1976. The seminar was attended by managers, chief engineers, and public health officers from twenty-seven developing countries as well as by representatives from various international organizations. The main objective of the seminar was to exchange ideas and experiences and to discuss approaches, methods, and techniques that can contribute to an accelerated provision of water supply and sanitation facilities to larger sectors of the population in developing countries. The seminar dealt with various aspects of water supply, such as policy, planning, organization and management, finance, human factors, and technology. The papers presented at the seminar are likely to be of interest to a broader audience and could be used in regional and national seminars. A compilation of the seminar's papers has recently been published in the IRC Bulletin Series (Bulletin No. 10) and is now available, free of charge, directly from the IRC. The various papers are also available individually. Titles of the individual papers are: 1, Current Situation of Community Water Supply in Developing Countries; 2, A Strategy to Meet Short and Long Term Water Demand in Developing Countries; 3, The Experience with National Sector Studies: Identification of Constraints and Priorities; 4, A Successful Approach to Community Water Supply Programming in Latin America; 5, Planning Water and Sanitation Systems for Small Communities; 6, Financing a Rural Water Supply Programme; 7, Organization and Management of Community Water Supplies; 8, Operation and Maintenance. The Case of Mexico; 9, Towards a Fuller Appreciation of Community Involvement; 10, Assessment of Manpower Needs and Training Programmes; 11, Research and Development Needs in Community Water Supply; 12, In-country Production of Equipment and Chemicals for Community Water Supply; 13, Drinking Water for Every Village; Choosing Appropriate Technologies; 14, Some Basic Ideas on Establishing a Water Treatment Technology adapted to Developing Countries; 15, Low Cost Distribution Systems. Further information: IRC, P.O. Box 140, 2260 AC Leidschendam, The Netherlands.

News from WHO

PROVIDING PRIMARY HEALTH CARE FOR ALL

(based on the report on the WHO-UNICEF Joint Regional Meeting on Primary Health Care, SEARO, 21 to 26 November, 1977, document SEA/PHC/Meet.D)

During the past years, there has been growing concern among countries throughout the world about the widespread inadequacy of health services. International agencies such as WHO and UNICEF have also been concerned about health services not reaching the rural and urban poor who constitute the major part of the population in all developing countries. The solution to this problem is to bring primary health care to all the underserved peoples in the world. To review and to promote the activities of primary health care in WHO's South-East Asia Region, some 90 experts in health affairs, planning, economics, agriculture, social welfare, and rural development from 10 member countries of the Region, as well as representatives of national and international agencies from various parts of the world, met in New Delhi from 21 to 26 November, 1977. The main points of the meeting were: Development needs of the developing countries; Interrelationship of health, poverty, development and other sectors and multisectoral approach; Primary health care as a part of the national health system both as part of overall and national development; Organizational and manpower considerations; Community organization and community participation; Research; Methods of integrating health and other sectors. All participants felt that there was an urgent need for their Member Nations to work towards the objective of achieving Health for All by the year 2000.

Further information: WHO Regional Office for South-East Asia, World Health House, Indra-Prastha Estate, Ring Road, New Delhi 1, India.

New Publications

The Water Research Centre has recently published a paper on Cost Information for Water Supply and Sewage Disposal (TR 61). It gives a comprehensive account of the approach taken and the results obtained in the formulation of cost functions for capital in water supply and sewage disposal. Further information: Water Research Centre, Medmenham Laboratory, P.O. Box 16, Marlow, Bucks, SL7 2HD, United Kingdom.

Proceedings of the Fourth Annual Conference of the California Association of Reclamation Entities of Water (WATERCARE) are now available. The 255-page volume contains papers and Association minutes from the June 26 - 29, 1977 meeting in Concord, California. With the theme "Water Conservation and Re-Use in the Drought", paper subjects range from utility and agricultural conservation to state policy, federal-aid, dual-distribution systems, and waste-water re-use plans and applications. The publication (price U.S. \$ 5) is available from WATERCARE, 5750 Almaden Expressway, San Jose, CA 95118, U.S.A.

Meetings

The Royal Society of Tropical Medicine and Hygiene in conjunction with the International Association on Water Pollution Research and the Institution of Civil Engineers is organizing a Symposium on Engineering, Science and Medicine in the Prevention of Tropical Water-Related Disease. The symposium will be held in London, 11-14 December, 1978. Some of the subjects for discussion will be: Engineering and Health, Water-related Disease, Water Supply and Water Supply Technology, Excreta Disposal, Water Pollution Control. Further information: Conference Office, Institution of Civil Engineers, 1-7 Great George Street, Westminster, London SW1P 3AA, United Kingdom.

The American Institute of Chemical Engineers (AIChE) is sponsoring two 2-day courses on Advanced Wastewater Treatment as follows: Philadelphia, Pennsylvania - June 3-4, 1978 and Miami Beach, Florida - November 11-12, 1978. Further information: A.I.Ch.E., Continuing Education Department, United Engineering Center, 345 East 47th Street, New York, NY 10017, U.S.A.



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News from the IRC

In a paper presented at the International Training Seminar on Community Water Supply in Developing Countries, September 1976, Amsterdam, the Netherlands, S. Unakul, Regional Adviser in Environmental Health, WHO Regional Office for South-East Asia, discussed the current situation in community water supply and excreta disposal and the progress made during the first half of the decade (1970-1980). Revised targets for 1980 are to provide 91% of the urban and 36% of the rural population with water supply at an estimated investment of US \$21,000 million during 5 years. It was shown that lower unit costs and appropriate design criteria, technology and level of service are necessary, so as to serve more people. The survey also indicated typical constraints which hamper progress; insufficient internal financing and lack of trained personnel were given high rating by the countries. Although the surveys may not give a very accurate account of the situation, the magnitude of the problem and resources required could be assessed very well. National programmes are required to develop the sector, with international and bilateral collaboration as available. Further information: International Reference Centre for Community Water Supply, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

PUBLIC STANDPOSTS FOR DEVELOPING COUNTRIES

The Proceedings of an international Expert Meeting held in Achimota (Accra), Ghana, in August 1977, Public Standposts for Developing Countries, (Bulletin No. 11) have now been published in the IRC Bulletin Series. The meeting was organized by the IRC in association with the Ghana Water and Sewerage Corporation (GWSC). Its organization provided for plenary discussions, working group discussions, and a field visit to public standposts in Accra. The objectives of the meeting were: to review and discuss in detail the draft report on public standposts, as prepared under the auspices of the IRC; to formulate criteria for planning, design, operation, maintenance and administration of public standpost systems; to identify gaps in activities; to comment on the proposal for the compilation of a construction manual for public standposts, and for a testing programme on suitable taps; to advise on suitable mechanisms for the transfer of information and experiences collected. Further information: International Reference Centre for Community Water Supply, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

Federal Republic of Germany

NEW TECHNOLOGIES IN COMMUNITY WATER SUPPLY

A seminar on New Technologies in Community Water Supply was held on the occasion of the Annual Meeting of the German Association of Gas and Water Engineers and the Association of the German Gas and Water Industries on 19 January, 1978 in Hanover. First results were reported on studies which were sponsored by the water industries and the Ministry of Research and Technology. Some of the topics dealt with were: micropollutants, treatment for artificial recharge, removal of dissolved organic substances, oxidation and absorption and activated carbon filtration. Further information: Deutsche Verein des Gas- und Wasserfaches (DVGW), 6 Frankfurt am Main, Frankfurt, Federal Republic of Germany.

Pakistan

ECOLOGICAL ASPECTS OF SEWAGE OXIDATION

K. Ahmed of the Institute of Public Health Engineering and Research, Lahore, has recently published a thesis entitled A Study of Some Ecological Aspects of Sewage Oxidation Ponds Under Local Conditions. The study includes: inter-relationship between various environmental factors and the composition of algal flora of the ponds, factors affecting growth of algae in domestic sewage, survival of indicator organisms and microscopic animals, fungi, and their role in the treatment of sewage. The experiments were carried out on four rectangular oxidation ponds each in an area of about one fourth of an acre (0.1 ha) running in parallel and treating domestic sewage. The ponds are situated near a residential colony of Lahore. Further information: Institute of Public Health Engineering and Research, University of Engineering and Technology, Lahore, Pakistan.

Democratic Republic of Sudan

HAFIR LININGS

Sudan, in common with many other countries, suffers from the major problem of maintaining adequate water supplies for both domestic and agricultural use. In the western Sudan, the wet season lasts for about four months. For the remaining two-thirds of the year, water is only available from a few shallow open wells and reservoirs, both natural (fulas) and man-made (hafira). An experimental investigation was started in 1969 to assess the performance of four polythene and two compacted-earth linings as methods of reducing seepage in small hafira. It was set up under the auspices of the United Kingdom Ministry of Overseas Development in conjunction with the Rural Water Corporation of the Sudan. Data were collected at the site at Lunya, near El Fasher in Darfur Province, from 1969 to 1976. Analysis of the data was performed in the Overseas Unit of the Hydraulics Research Station and the results are presented in a report entitled A Study of Hafir Linings in Darfur Province, Western Sudan. The seepage control capability of each type of lining is evaluated and the results are related to lining conditions observed during a site inspection carried out in 1976. An estimate is made of the useful life of each type of lining. Further information: Hydraulics Research Station, Wallingford, Oxon. OX 10 8BA, United Kingdom.

U.S.A.

MANUAL OF TREATMENT TECHNIQUES

Following the passage of the Safe Drinking Water Act, the National Interim Primary Drinking Water Regulations were promulgated to take effect 24 June, 1977. These regulations set maximum contaminant levels (MCL's) for ten inorganic constituents, turbidity, coliform organisms, pesticides and radionuclides. The Manual of Treatment Techniques for Meeting the Interim Primary Drinking Water Regulations is a publication of the U.S. Environmental Protection Agency, Office of Research and Development, Municipal Environmental Research Laboratory, Water Supply Division, Cincinnati, Ohio (May 1977). It provides information on the treatment technology that should be used to comply with the MCL's. There is a lack of information on treatment technology applicable to small water treatment utilities serving 1,000 consumers or less and research is underway to attempt to fill this gap. Cost data are provided; however, they may not apply to all situations. Further information: U.S. Environmental Protection Agency, Office of Research and Development, 26 W. St. Clair Street, Cincinnati, Ohio 45268, U.S.A.

New Publications

The International Reference Centre for Wastes Disposal (IRC/WD) has recently (1978) published two documents on composting. Methods of Analysis of Sewage Sludge, Solid Wastes and Compost is a concise account of sampling, preparation and analysis procedures utilizing (except for heavy metals determination in sludge) very simple analytical technologies. Those responsible for solid wastes management programmes should find it very useful. Compost - An annotated bibliography on Compost, Compost Quality and Composting 1971-1977 contains 417 entries and has been compiled from the library holdings of the IRC/WD. The bibliography will be of special value to researchers as well as to those operating or planning composting operations. Both publications are available from: International Reference Centre for Wastes Disposal, c/o EAWAG, CH-8600 Dübendorf, Switzerland.

Proceedings of the Fourth National Conference on Individual Onsite Wastewater Systems, are now available. The four-volume report may be obtained from: Ann Arbor Science Publishers, Inc., P.O. Box 1425, Ann Arbor, Michigan 48106, U.S.A. Price: Vol. 1 and 2 \$20.00 each, Vol. 3 and 4 \$22.50 each.

The Department of Civil Engineering, Loughborough University of Technology, is planning a number of courses dealing with Water and Waste Water in Developing Countries. Their future programme includes:

- a one-week Technological Orientation course for engineers from industrial countries intending to work overseas: 8-13 October, 1978
- a one-week Technological Up-Date course for engineers from both developing and industrial countries whose work is in developing countries
- a three-week course on Groundwater starting 19 February, 1979
- the 5th WEDC Conference on 24-25 April, 1979: engineers working in developing countries are invited to submit proposals for papers
- a three-month course for senior engineers and scientists: April-July, 1979.

Furthermore, a MSc course is being planned to start in September 1979. Further information: Course Director, Department of Civil Engineering, University of Technology, Loughborough, Leicestershire LE11 3TU, United Kingdom.



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News from IRC

In a paper presented at the International Training Seminar on Community Water Supply in Developing Countries, September 1977, in Voorburg (The Hague), Netherlands, H.R. Shipman discusses Strategies to Meet Short and Long Term Demand in Developing Countries. In his paper Shipman states that project planning and implementation can seldom be realized within 5 years, so new activities can only change the situation after 1980. For medium term planning (1985) countries should base their plans on the present situation, needs, and resources. To set realistic goals which can reasonably be achieved, data from past and present performance are required. Based on data from the WHO 1975 survey, corrected country data and per capita cost figures can be used for setting appropriate targets which are within the country's resources, including manpower for design, construction, and operation. Targets have to be converted into a working plan. For the required engineering and feasibility studies, local consulting capacity needs development. Other factors which require attention are organization and management, a well defined policy, and manpower development. For the long-range strategy (1990 or later) advance programming would be beneficial for a sound development and yearly updating of five-year plans is advocated. A review of service levels and investment needs for the sanitation sector is also given. Further information: IRC, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

News from WHO

Public Health in Europe No. 8, a recent publication of the WHO Regional Office for Europe, Copenhagen (1977, 162 pages, price: Sw.fr.18.-) is devoted to health and the environment, and seeks to highlight some environmental health problems of current concern in Europe. Some of the activities of the WHO Regional Office for Europe in this field are described in 14 articles contributed by Regional Office Staff and consultants, including field staff working in country projects. In the European Region, as elsewhere, there is widespread interest in environmental conservation and protection, and there are growing fears about the impact of new industrial processes, including new forms of energy production, as well as about the adverse effects of changing land-use patterns and increasing environmental pollution and degradation on human health and the quality of life. Continuing studies are necessary for assessing occupational health hazards associated with new chemicals used in industry as well as other types of environmental pollution in the place of work, in the home, or in recreational areas. There is need to improve techniques of predictive epidemiology and risk assessment, as well as for legislative action. Warnings about possible health hazards must be disseminated as quickly and as widely as possible. It is also necessary to design control measures and plan reductions in emissions of pollutants from industrial and domestic sources. In all these activities the Regional Office is cooperating closely with Member countries. The strengthening of environmental services is closely linked with the training of personnel both for management and for operating treatment plants and other control facilities. Already, a large number of specialists have been trained for environmental work, but effective management requires the active cooperation of biologists, chemists, engineers, physicians, lawyers, economists, and planners. The Regional Office is therefore proposing that greater emphasis be given to interdisciplinary training for managers and other professional manpower employed in the field of environmental health. (Adapted from WHO Chronicle, 1978, Vol. 32, No. 5, p. 216). Further information: World Health Organization, 1211 Geneva 27, Switzerland.

World Bank

PVC WELL SCREENS

The paper Development of PVC Well Screens for Local Fabrication in Developing Countries, by Y. Sternberg and R. Knight of the International Rural Water Research Development Laboratory, University of Maryland, is issued as P.U. Report RES 14 of the Research Working Papers Series of the World Bank, Energy, Water and Telecommunications Department. In rural areas of developing countries, the cheapest and safest source of water is usually groundwater. Pipe suitable for PVC well casings is manufactured in a number of developing countries, but high-efficiency PVC well screens have to be imported. This paper describes the development of a well screen that can be made in most developing countries: PVC is extruded through a special die to form a pipe with internal stiffening ribs. Short sections of pipe are then mounted on a standard lathe and a helical spiral slot cut in the pipe wall, using a small circular saw. The resulting screen has a large open area and appears highly competitive with screens available commercially. It allows screen characteristics to be readily adapted to the actual field conditions. Field trials of the new product are being arranged. Further information: World Bank, 1818 H. Street N., Washington, D.C. 20433, U.S.A.

This Newsletter is issued on the responsibility of the WHO International Reference Centre for Community Water Supply. It does not necessarily reflect the views and policies of WHO.

United Kingdom

CARCINOGENICITY OF ORTHO-TOLIDINE

Ortho-tolidine is a well-known chemical in testing residual chlorine in the process of disinfection. In view of the questions related to the health risks involved in its use, reference is made to the Recommended Code of Practice for Laboratory Staff when handling chemicals which may cause tumours of the urinary tract published by the Chester Beatty Research Institute, Institute of Cancer Research, Royal Cancer Hospital, London. Ortho-tolidine belongs to the above group of substances and exposure can occur from the inhalation of the dust or vapour and bodily contact with the chemical. Protective measures are thus intended to prevent any contact with the chemical through the lungs, mouth or skin. The use of other chemicals is recommended whenever possible and young persons should not be asked to use the carcinogenic substances. The main danger clearly arises with people who are in contact with the solid material. In the United Kingdom production of ortho-tolidine has been banned and a routine of six monthly medical checks has been established for persons who handle the material. Further information: Chester Beatty Research Institute, Institute of Cancer Research, Royal Cancer Hospital, London, United Kingdom.

Meetings

The Water Research Centre is organizing a Conference on Water Distribution Systems: Maintenance of Water Quality and Pipeline Integrity. The Provisional Programme indicates the following sessions: Water Quality Changes in Distribution, Degradation of Pipes and Fittings, Chemical and Operational Remedies, In-situ Lining Processes. Further information: Water Research Centre, Medmenham Laboratory, Henley Road, Medmenham, P.O. Box 16, Marlow, Bucks. SL7 2HD, United Kingdom.

International Conference on Developments in Land Methods of Wastewater Treatment and Utilisation, 23 to 27 October, 1978, University of Melbourne, Victoria, Australia.

The conference will be held under the auspices of the International Association on Water Pollution Research and is being co-sponsored by: Australian National Committee of the International Association on Water Pollution Research, Australian Water and Wastewater Association, Asian Regional Division of the International Association of Hydraulic Research, The Melbourne and Metropolitan Board of Works, The University of Melbourne and The Commonwealth Scientific and Industrial Research Organisation, Division of Chemical Technology. It is intended that the conference will provide a forum for people undertaking research into processes associated with the use of land for the treatment, disposal and utilisation of domestic, industrial and agricultural wastewater and for people who are interested in the application of such processes. Further information: IAWPR Conference Secretary, Melbourne and Metropolitan Board of Works, Box 4342, GPO, Melbourne, 3001, Australia.



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newsletter

Newsletter No. 91 - September 1978

News from IRC

PUBLIC STANDPOSTS FOR DEVELOPING COUNTRIES

Recently published in the IRC Bulletin Series (No. 11) is the report of an International Expert Meeting held in Achimota (Accra), Ghana, 8-12 August, 1977. The meeting was organized by the IRC in association with the Ghana Water and Sewerage Corporation and with the support of the World Bank. The report presents the outcome of discussions on aspects of public standpost water supplies, such as: operation and management, economics, socio-cultural factors, technology, planning and design. The expert meeting was held in the context of the IRC programme on public standpost water supplies, which is being developed further. The programme's objective is to provide guidance and support in the planning, installation and management of public standpost systems in developing countries. It also aims at stimulative information exchange, and transfer of knowledge and experience relating to public standposts. At the moment, the IRC is finalizing for publication a comprehensive report on public standpost water supplies. This report consolidates selected information obtained by the IRC in the first phase of the programme. Copies of the expert meeting report, and further information about the IRC programme on public standpost water supplies may be requested from: IRC, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

In a paper presented at the International Training Seminar on Community Water Supply in Developing Countries, September 1976, in Voorburg (the Hague), Netherlands, Dr. E. Becher of WHO discusses The Experience with National Sector Studies: Identification of Constraints and Priorities. Five years of experience of sector studies carried out by the WHO/IBRD Cooperative Programme in 32 countries are reviewed. Studies of the Community Water Supply and Sanitation Sector have been undertaken to provide basic information on the actual situation, to identify problems, establish linkages with national plans, and to make recommendations for the development of the sector. A sector study may also stimulate the national planning process. Details are given of sector study and follow-up procedures in conjunction with national development plans, the role of WHO and IBRD staff in assisting the governments, and the structure of the sector report. Also dealt with are information requirements, economic and financial aspects, institutional options of the sector, manpower planning, and its relation to country health programming. To develop the sector it is suggested that programmes should be related to national policies and objectives, e.g. in the context of rural or regional development. Further information: IRC, P.O. Box 140 2260 AC Leidschendam, the Netherlands.

India

LOW COST TREATMENT PLANT

J.N. Kardile of the Maharashtra Engineering Research Institute, Nasik-4, reports on savings of 50% in the construction of a water treatment plant near Varangaon by eliminating mechanical equipment normally required in the various stages in treating high turbidity waters and using masonry in most of the works (capacity 4200 cubic metres to be supplied in 18 hours). After a one-minute mix with coagulant in a baffle mixing channel, the water passes downflow gravel-bed flocculation filters. High rate settling is obtained in tube settling tanks provided with a layer of rigid PVC square tubes (50 x 50 mm.). In the dual-media filters a 40 cm. layer of crushed coconut shell (size 1-2 mm.) is provided on top of the sand medium (effective size 0.5, uniformity coefficient 1.5). Satisfactory results were obtained in the plant runs in which turbidities up to 4000 turbidity units have to be coped with in the rainy season. Reference: J.N. Kardile, A New Conventional Treatment Plant at Varangaon, Journal of the Indian Water Works Association, Vol. X, No. 1, January-March 1978, pp. 109-118.

U.S.A.

INTERIM DRINKING WATER REGULATIONS

The National Interim Primary Drinking Water Regulations as published by the Environmental Protection Agency, Office of Water Supply (no. EPA-570/9-76-003) were promulgated on 24 December, 1975, in accordance with the provisions of the Safe Drinking Water Act (Public Law 93-523). Additional Interim Primary Regulations for radioactivity in drinking water were promulgated on 9 July, 1976. These regulations became effective on 24 June, 1977 and became in essence the standards by which all public drinking water supplies are judged. These regulations will replace the Public Health Service Drinking Water Standards of 1962. Further information: Environmental Protection Agency, Office of Water Supply, 401 M. Street, Washington, D.C. 20460, U.S.A.

News from WHO

The WHO South-East Asia Regional Office has recently published a 53 page document entitled Community Water Supply and Excreta Disposal in South-East Asia (WHO Regional Publications, South-East Asia Series No. 4, price Sw.fr.6.-). The publication carries a critical analysis and appraisal of the problems of water supply and excreta disposal. A statistical portrayal of the mid-decade status in the Member countries of the Region highlights the heavy backlog in the provision of safe drinking water and sanitary facilities to the populations which, in the words of the Regional Director, "must stir the civic conscience of national and international agencies". Current deficiencies in programme planning and implementation are discussed and analysed so that Member countries may explore measures to improve their programme capabilities. The financial, economic and social aspects of this sector in national development are brought out and the importance of the management of utilities has been stressed in the context of mobilizing resources to meet the targets of the Second United Nations Development Decade. The increasing interest of external bilateral and multilateral aid agencies in helping the developing countries in this sector, and the catalytic role of WHO as a technical cooperation agency to the Member countries have been pointed out. The document should prove to be of value in prompting Member countries of the Region to take stock of their current situations and reorient their plans so as to achieve a breakthrough in this important sector. The publication is a timely stimulant for speeding up the sectoral activities to match the expectations of the International Decade as declared at Mar del Plata in 1977 by the United Nations Water Conference, that is, to provide safe water supply and sanitation facilities for all, if possible, by the year 1990. (Adapted from WHO Chronicle, 1978, Vol. 32, No. 8, p. 330). Further information: WHO Regional Office for South-East Asia, World Health House, Indraprastha Estate, Ring Road, New Dehli 1, India.

New Publications

The Minimum Cost Housing Group of McGill University has published a booklet which reports the results of studies carried out by members of the Group on methods of controlling water usage in everyday activities by means of various mechanical aids. Methods of controlling the water supply to ensure the amount and flow of water directly related to the specific need have also been studied. The authors of this publication, entitled Water Conservation and the Mist Experience are Alex Morse, Vikram Bhatt and Witold Rybczynski. Further information: Minimum Cost Housing Group, School of Architecture, McGill University, 3480 University Street, Montreal, Quebec H3A 2A7, Canada.

Water, Health and Development: an interdisciplinary evaluation is a recent publication by Richard Feachem and co-authors. The book is divided into two parts. In part one, the nine authors (representing the fields of engineering, economics, social anthropology, microbiology and medical statistics) present their findings from an 18-month study of the rural water supply programme in Lesotho. These findings, together with studies from other countries are the basis for the general discussion in part two of the publication which covers the various aspects of the planning and design of rural water supply programmes in developing countries. Publisher: Tri-Med Books Limited, 5 Tudor Cottage, Lower Walk, Finchley, London N3 1JH, United Kingdom, price £3.25 or U.S. \$7.-.

Intermediate Technology Publications Ltd. have issued a new publication by S.B. Watt, entitled Ferrocement Water Tanks and their Construction. This publication describes in detail methods of constructing water storage tanks from wire-reinforced cement-mortar. It is available from IT Publications Ltd., 9 King Street, London WC2E 8HN, United Kingdom or International Scholarly Book Service Inc., P.O. Box 555, Forest Grove, Oregon 97116, U.S.A., price £2.95 net, £3.39 surface and U.K. postpaid, £3.98 airmail.



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newsletter

Newsletter No. 92 - October 1978

News from IRC

HAND PUMP MAINTENANCE

The hand pump is a major item in rural water supply. Careful design of hand pumps may prevent many difficulties but regular maintenance is normally the key to reliable performance of the pumps. The selection of a hand pump maintenance strategy and the establishment of an effective set-up for maintaining hand pumps requires consideration of many factors. There are no fixed rules to determine which balance in the involvement of government and village community (or other private organization) is right for each country. Mr. John Shawcross has prepared for the IRC a draft report on hand pump maintenance, drawing on information and experiences from hand pump tubewell programmes in a number of developing countries. Further information: IRC, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.

BOMBAS DE MANO

In August, 1977, IRC published, under the joint sponsorship of the United Nations Environment Programme and the World Health Organization, a comprehensive report on Hand Pumps for Use in Drinking Water Supplies in Developing Countries (IRC Technical Paper No. 10). This publication was very well received and has continued to draw favourable comments. In many developing countries the report is used in the planning and implementation of rural water supply programmes with hand pumps. Specific information on hand pumps is also in great demand in Latin America. With the English version of the Hand Pump publication, only limited coverage of the Spanish-speaking countries could be provided. The Pan American Center for Sanitary Engineering and Environmental Sciences (C.E.P.I.S.), Lima, Peru, has prepared a Spanish edition of the IRC publication. The report is published under the title Bombas de Mano and is distributed to national organizations having an active interest in hand pump programmes. Further information: C.E.P.I.S., Casilla Postal 4337, Lima, Peru.

Bangladesh

SURVEY OF MAINTENANCE AND CONDITION OF HAND PUMP TUBEWELLS

Bangladesh has some 670,000 hand pump tubewells, a considerable portion of which have been provided under the UNICEF-assisted Rural Water Supply Programme of the Public Health Engineering Department (Government of Bangladesh), the remainder having been constructed under earlier government programmes. A survey on the maintenance and condition of public/government hand pump tubewells in rural Bangladesh has been conducted by UNICEF, Dacca, to assess the present system of hand pump maintenance and to assist in the formulation of a comprehensive maintenance policy in the future. Following careful preparations including trials to check out the survey form, the survey was completed in December 1977. Data on 1,196 tubewells was obtained. A first report (May 1978) describes the set-up and results of the survey. Further information: UNICEF (Water Section), P.O. Box 58, Dacca-5, Bangladesh.

India

SMALL WATER TREATMENT PLANTS

S.V. Patwardhan of the University of Roorkee (U.P.) reports on the development of a MIMO Water Treatment Plant with the following elements. A proportional part of the raw water flow is diverted to displace the required saturated coagulant solution from a tank containing alum pebbles. Mixing takes place in the pipe leading towards the solid media (gravel) upflow flocculator. A light media which could be kept floating may be applied. In the "multi-bottom settler" the flocculated water flows at right angles (cross flow) to the settling water which flows upward along parallel inclined plates. Sand filters are provided with Multi-Inlet pipes at different heights of the bed and Multi-Outlet (MIMO) pipes between the inlet pipes. Low filtration rates ($2-3\text{m}^3/\text{m}^2/\text{hr}$) corresponds with 20-30 cm filter media required, resulting in a compact unit. Reference: S.V. Patwardhan, MIMO Water Treatment Plants, *Journal of the Indian Water Works Association*, Vol. X, No. 1 (1978), pages 73-81.

United Kingdom

WATER RESEARCH CENTRE

In September 1976, the Water Research Centre, Medmenham, arranged a conference on Groundwater Quality Measurement, Prediction and Methodology. Scientists and engineers from the fields of groundwater research, waste disposal and agriculture attended. 44 papers were presented at the conference and these, together with the conference proceedings have now been published (June 1978). The publication is subdivided into 6 sections on various topics, namely: Groundwater quality and the need to make predictions; Concentration and movement of pollutants; Data requirements and Collection Techniques; Field Investigations; Production Models; Protection and Rehabilitation. For more information concerning this publication (which costs £15.00), please write to: Water Research Centre, Medmenham Laboratory, P.O. Box 16, Henley Road, Medmenham, Marlow, Bucks. SL7 2HD, United Kingdom.

New Publications

The Minimum Cost Housing Group of the McGill University has published the 4th edition of the publication Stop the Five Gallon Flush, edited by Withold Rybczynski and A. Ortega. The first edition of this survey of alternative waste disposal systems was issued in July 1973. It contains 3 parts. Part 1 reviews the known methods for the disposal of household waste, noting the advantages and disadvantages. Special interest in this booklet is given to self-contained systems and systems that use little or no water. While most of the systems presented are low-cost technologies, a few more expensive systems are included. Part 2 gives a catalogue of 72 waste disposal systems from 10 countries. In part 3 attention is given to various types of compost toilets. Copies are available (price U.S. \$4.00) from: Minimum Cost Housing Group, School of Architecture, McGill University, 4380 University Street, Montreal, P.Q., Canada H3A 2A7.

URBAN WATER SUPPLIES

During the Symposium on Water Services: Financial, Engineering and Scientific Planning, organized by the Institute of Water Engineers and Scientists in December 1977, a paper was presented by B.M.U. Bennell of the Ministry of Overseas Development (United Kingdom) on Water Supply Problems in Lesser Developed Countries. In this paper, special attention is given to the water supply problems related to the further urbanization in developing countries which results in the expansion of the demand for water at a far greater rate than the developed world has ever experienced. To cope with these unprecedented rates of expansion and to build up the administrative and technical branches of the water supply undertakings in these urban areas, one of the prime needs is the training of staff at all levels and in all disciplines. The main subject of the symposium was the inter-relation between possible economic and financial policies in water services and desirable, or essential, scientific and engineering policies. The papers reflect different points of view on this subject and could be of interest to all kinds of water authorities. The proceedings have been published by and are available from: Institute of Water Engineers and Scientists, 6-8 Sackville Street, London W1X 1DD, United Kingdom.



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Canada

WATER RESOURCES DOCUMENT REFERENCE CENTRE (WATDOC)

WATDOC provides full bibliographic citations, keywords and abstracts to documents - published and unpublished -, books, journals, articles and conference proceedings, dating from about 1970, on Canada's water resources and related topics. Furthermore, the Centre provides access to a number of data bases, including that of the U.S. Water Resources Scientific Information Centre and also publishes a *Newsletter*. Further information: WATDOC, Inland Waters Directorate, Department of Fisheries and the Environment, Ottawa, Ontario, Canada K1A 0E7.

IWSA

The International Water Supply Association (IWSA) has recently set up a central coordination point for the organization of twinning contacts (bilateral cooperation between water supply organizations in developing countries and water supply organizations in industrialized countries). Further information: IWSA Committee for Cooperation, c/o Condensatorweg 54, 1005 AD Amsterdam, the Netherlands.

Sudan

RURAL WATER SUPPLY IN THE SUDAN

Mohammed Osman El Sammani analyzes, in *Bulletin No. 35* of the Economic and Social Research Council, National Council for Research, Khartoum, the rural water supply situation in the Sudan. The country was analyzed as a series of "drinking water envelopes" with the population living at 5, 10, 20 km or more from the water source. In Northern Kordofan province, 80,000 people live more than 20 km from the water source. Its population used to depend on the rainwater stored in tebel trees and on water melons for supplying water to the cattle. Water has to be supplied by lorries at high cost. In such areas where groundwater is not available and construction of hafirs and sinking of shallow wells is not feasible, an improved version of locally developed rain-catchment tanks might be considered. Further information: Economic and Social Research Council, National Council for Research, P.O. Box 116, Khartoum, Sudan.

United Nations

ACTION PLAN ON TECHNICAL COOPERATION AMONG DEVELOPING COUNTRIES

The United Nations Conference on Technical Cooperation among Developing Countries (TCDC) was held in Buenos Aires, Argentina, from 30 August to 12 September, 1978. In its concluding session a "Plan of Action for Promoting and Implementing TCDC" was adopted. The plan includes a strategy to help developing countries boost their national and collective self-reliance through pooling of technical knowledge and experience. Review of TCDC operations should be entrusted by the General Assembly to a high-level meeting of representatives of all States participating in the United Nations Development Programme. Although financing of TCDC activities is "primarily the responsibility of developing countries themselves", the Plan states, it will nevertheless be necessary for developed countries and the United Nations development system to support financially those activities without prejudice to the decision making control by the developing countries of these TCDC activities; in economic and technical cooperation activities given due priority to TCDC in inter-country projects and programmes. By its resolution on research and training, the Conference urged all developing countries to co-operate in strengthening research and training centres, with a view to providing them with a multinational scope in the framework of TCDC. Such centres can act as catalysts enabling each country to make further use of its potential and that of others in the region. Reference: United Nations Information Service, United Nations Office at Geneva, Palais des Nations, 1211 Geneva 10, Switzerland.

New Publications

PVC VALVE FOR PUBLIC HYDRANTS

The U.S. Agency for International Development has published the final report on the Development and Testing of the Robovalve. In the report, the authors Yaron M. Sternberg and Robert Knight of the University of Maryland, International Rural Water Resources Development Laboratory, describe the experimental work that has been done to test the qualities of a newly developed PVC valve. Three types were designed; one for a public hydrant or standpipe, one for a household or yard tap and one for a tap for plastic water containers. Valves that had been operated approximately 350,000 times showed almost no wear and their good sealing characteristics resulted in essentially zero volume leakage. The Robovalve can be manufactured from standard PVC stock or by injection moulding. Data on the production cost of the Robovalve are also given in the report. The authors recommend a further field testing of the valve in order to determine the wear and sealing characteristics of the Robovalve under intensive consumer usage. They also conclude that evaluation has to take place on the acceptability of the valve in different cultures and that local manufacture in developing countries must be stimulated in order to have the valve produced in the countries themselves. Further information: Agency for International Development, Office of Health, Washington D.C. 20523, U.S.A.

WATER METERING PRACTICES

In *Aqua* (No. 2, 1978) - a journal published by the International Water Supply Association - Harold R. Shipman reports in an article entitled Water Metering Practices, on the results of a 1977 survey on water metering practices. Questionnaires on domestic water metering policies and practices were mailed to all member countries of the IWSA and to other selected countries. From the 300 forms mailed, the author - formerly water supply adviser to the World Bank - received replies from 44 cities in 26 countries. The purpose and scope of the survey was to explore the policies and practices with regard to metering and sale of water to domestic consumers. Information on unmetered systems as well as on industrial, commercial and public use of water was also included to provide a basis for comparison and interpretation. Shipman discusses the effects of water metering on water use; water use by different types of consumers; the frequency of reading meters and billing. Attention is also paid to public hydrants.

Conferences

Third International Congress on Water Resources, Mexico City, Mexico, 23-27 April, 1979. The central theme of the Congress will be Water for Human Survival. The subjects will be: water for food production, water for energy production, water and rural development, education and research on water resources and water problems in modern society. Further information: 11 Congreso Mundial Sobre Aprovechamientos Hidraulicos Comité Organizador, Apartado Postal 19-434, México, D.F., México.



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newsletter

Newsletter No. 94 - December 1978

U.S.A.

STANDARDS TO BE SET FOR HOME DRINKING-WATER FILTERS

Under the auspices of the National Sanitation Foundation (NSF), government, science and industry representatives have met to set new standards of performance, design and construction for home drinking-water filters that claim health-related benefits. The goal of the standards is to specify water filter construction and performance. The standards development and testing programme is expected to be completed by mid-1979, after which drinking-water filters will be evaluated by the established performance test procedures. Further information: National Sanitation Foundation, P.O. Box 1468, 2355 West Stadium, Ann Arbor, Michigan 48106, U.S.A.

OZONE AND CHLORINE DIOXIDE

Many countries in Europe have long been faced with the necessity of producing safe drinking-water from chemically polluted raw water sources. As a result, there has been extensive development of drinking-water treatment technologies in Europe, particularly related to the usage of ozone and chlorine dioxide as oxidants and use of granular activated carbon as a filtration/adsorption process. The study *An Assessment of Ozone and Chlorine Dioxide Technologies for Treatment of Municipal Water Supplies* involved a comprehensive review of European, Canadian and U.S.A. practices in the use of ozone and chlorine dioxide as process oxidants in the treatment of municipal drinking-water supplies. Some studies of the use of granular activated carbon with pre-ozonation or "biological activated carbon" (BAC) are discussed. The results of this study indicate that ozone, chlorine dioxide and ozonation followed by BAC are being employed successfully by a large number of European and some Canadian water utilities to deal with the problems of trihalomethanes, synthetic organic chemicals, bacterial disinfection, viral inactivation and other substances in raw water supplies. Further information: U.S. Environmental Protection Agency, Municipal Environment Research Laboratory, Cincinnati, Ohio 45268, U.S.A.

U.S.S.R.

INTERNATIONAL CONFERENCE ON PRIMARY HEALTH CARE

The International Conference on Primary Health Care was organized by the World Health Organization (WHO) and the United Nation's Children's Fund (UNICEF) at Alma Ata, U.S.S.R., from 6 to 12 September, 1978. The intergovernmental conference was attended by delegations from 134 governments and by representatives of 67 United Nations organizations, specialized agencies and non-governmental organizations in official relations with WHO and UNICEF. The Conference called for "urgent action by all governments, all health and development workers and the world community to protect and promote the health of all the people of the world". The following item is from the ten-point Declaration of Alma Ata: "VII. Primary Health Care . . . includes at least: education concerning prevailing health problems and the methods of preventing and controlling them; promotion of food supply and proper nutrition, an adequate supply of safe water and basic education; maternal and child health care, including family planning; immunization against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common diseases and injuries; and provision of essential drugs".

Meetings

River Pollution Control will be the subject of a Water Research Centre Conference to be held at Keble College, Oxford, 9-11 April, 1979. The Conference is intended to bring together those who are concerned with the control of river pollution and with the measures, both legislative and technical, which are taken. Four sessions will be held on: The International Scene; River Water Data Collection; The Uses of Quality Data and Emission Standards and Water Quality Objectives. Further information: Conference Organizer, Water Research Centre, Medmenham Laboratory, P.O. Box 16, Medmenham, Marlow, Bucks. SL7 2HD, United Kingdom.

World Bank

SOCIO-CULTURAL ASPECTS OF WATER SUPPLY AND EXCRETA DISPOSAL

Socio-cultural Aspects of Water Supply and Excreta Disposal is a report prepared by M. Elmendorf and P.K. Buckles for the Energy, Water and Telecommunications Department of the World Bank as part of the World Bank research project on Appropriate Technology for Water Supply and Waste Disposal. Social and cultural factors influencing people's responses to water supply and excreta disposal technologies are investigated in eight case studies of communities in the rural and urban fringe areas of Latin America. Part 1 describes the methodology and questionnaire used to investigate how sanitation and water supply problems are perceived and to what extent people would be willing to participate in projects to improve their existing situation. Part 2 summarizes each case study, including the technologies introduced and community response to them. Part 3 presents the cross-community findings on perceptions, preferences, related practices and the use of social science techniques to understand them. Part 4 focuses on the implications of the findings and suggests an approach, which can be used by planners to integrate social and cultural factors into project design to ensure the introduction of water supply and excreta disposal technologies which will be accepted, properly used and maintained. Further information: Energy, Water and Telecommunications Department, World Bank, 1818 H. Street, N.W., Washington, D.C. 20433, U.S.A.

New Publications

GOODBYE TO THE FLUSH TOILET

Goodbye to the Flush Toilet, edited by Carol Huppig Stoner, is a recent publication from Rodale Press. The book, price £3.95 is concerned with "water-saving alternatives to cesspools, septic tanks, and sewers". An extract from the publication reads "for one person, the typical five-gallon flush contaminates each year about 13,000 gallons of fresh water to move a mere 165 gallons of body waste. What this means is that we're taking a valuable, clean resource - water - and a potentially valuable resource - human excrement - and mixing them together to pollute the water and make the fertilizer potential of body wastes just about useless. And then we pay dearly to separate them again". Available from: Rodale Press Inc., Emmaus, PA, U.S.A.

The IRC Information Section is in constant need of new photographs to up-date its stock. These are used in various publications, training seminars, etc. It would therefore be very much appreciated if Newsletter readers would submit any recent, good quality photographs on aspects of water development and management both large and small-scale, such as use of equipment, new techniques, rehabilitation methods, training of counterparts, well drilling, drainage techniques, sanitary problems, etc. The photographs should be black and white (glossy) and should be accompanied by the name of the photographer, year, country and project and a short caption. They should be addressed to Ms. Barbara Isgar Information Assistant, Information Section, International Reference Centre for Community Water Supply, P.O. Box 140, 2260 AC Leidschendam, the Netherlands.