



who international reference centre for community water supply

the hague, the netherlands, parkweg 13, telephone 070-51 44 41
telegr.: worldwater the hague, telex: 336004

newsletter

No. 49 - January 1975.

News from IRC

PROSPECTS FOR 1975

First of all the staff of IRC wishes all readers of the Newsletter a happy and prosperous New Year.

IRC is expecting considerable expansion and acceleration of its coordinating activities in the field of community water supply in 1975. Trying to bridge the gap between readily available knowledge and the application of that knowledge in the form of development and improvement of water supplies, especially in developing countries, special attention will be paid to projects as: slow sand filtration (biological filtration), re-use of waste water, appropriate technologies, examination of the quality of drinking-water, standpipes, handpumps, training, twinning, information exchange, etc.

Intensification of the cooperation within the network of collaborating institutions will be a logical consequence of carrying out this program. In this connection it may also be mentioned that the fifth annual report of IRC is available and will be forwarded on request. Information (New-address as from December 9, 1974): Damsigt Nieuwe Havenstraat 6, Voorburg Z.H., The Netherlands.

Canada

RURAL WATER SUPPLY AND SANITATION IN LESS-DEVELOPED COUNTRIES

A selected annotated bibliography with the above-mentioned title has been compiled by Anne U. White and Chris Seviour of the Institute of Behavioural Science of the University of Colorado. This bibliography lists articles written on the subject of rural water supply and sanitation in less-developed countries. They are listed according to whether they deal with general topics, technology or health and diseases. Other bibliographies on the subjects of rural water supplies are also listed. Published by: International Development Research Centre, 1974. Postal address: P.O. Box 8500, Ottawa, Canada, K1G 3H9.

Israel

UTILIZATION OF BRACKISH WATER FOR IRRIGATION

The "Mekoroth" Water Company and the agriculture experimental station of Eilat-Yotvata country council have commenced a series of experiments to introduce brackish water for irrigation of tropical grasses cultivated for forage purposes. The water contains 1200 ppm Cl and the electrical conductivity is 4.2 mmhos/cm. The soil consist of coarse sand with a high hydraulic permeability. The average temperature is 35°C and the annual precipitation is about 40 mm. Consequently fresh water is scarce, but there are substantial amounts of brackish water. The grasses under consideration (Rhodes Grass and Green Pamie) yield 40 ton dry matter per hectare per year. Information: Mekoroth Water Company, 9, Lincoln Street, Tel Aviv, Israel.

The Netherlands

ORIGIN OF BRACKISH GROUNDWATER

Brackish groundwater can be found in aquifers even far inland in many parts of the world. In coastal regions it may even reach the surface. If these aquifers are of fluvial origin, the salt must have been brought there after sedimentation. Existing theories about the transport mechanism do not always stand a critical review. The occurrence of brackish groundwater in the Netherlands can only partly be explained by recent (Holocene) encroachment of the sea. In sea-covered areas chloride-ions are transported into the

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underground mainly by molecular diffusion. From deep-lying marine sediments of the early Pleistocene and Tertiary age, the salt may have been transported upwards by hydrodynamical dispersion. The effect of these phenomena may be quantified if geological history and groundwater flow pattern are known. Brackish groundwater bodies have changed after the construction of polders, which caused a reversal in landscape and consequently in groundwater flow. Previous and present river arms are now recharge areas, whereas from the low-lying polders in between, groundwater is discharged. A paper on "The origin of brackish groundwater in the lower parts of the Netherlands" was presented by C.R. Meinardi at the Salt Water Intrusion Meeting held in August 1974 at Ghent. Copies are available from the Government Institute for Water Supply, 13 Parkweg, The Hague.

Thailand

WATER SUPPLY IN NORTH-EAST THAILAND

In 1966 a Community Potable Water Project was started to provide communities in North-East Thailand of 500 to 5000 population size with potable water and by July 1972 about 165 potable water systems making use of different treatment systems have been completed. With an estimated 25,000 rural communities still needing potable water systems, an evaluation of the project was needed to serve as a basis for realistic formulation of the future of the programme. The resulting report describes (1) the general capability of the technical design of the water systems; (2) the level of local operator training and efficiency; (3) the adequacy of administrative procedures adopted; and (4) the acceptance of the systems by the villages. The study shows clearly the problem of introducing to the village an innovation in the traditional way of life, which brings about a significant cost or charge to the individual without his being in a position to appreciate fully the value of what he is getting for this charge. For further details, the reader is referred to Frankel, R.J. (1973) Evaluation of Effectiveness of Community Water Supply in North-East Thailand, Bangkok. Information: Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand.

United Kingdom

WATER RESEARCH CENTRE AND WRC-INFORMATION

From April 1, 1974, Water Research Centre (WRC) is established as the central research organization for water in the United Kingdom. Besides the research programmes of Stevenage and Medmenham Laboratories, of which an outline is available, the weekly-bulletin of WRC is also worth mentioning. This "WRC-Information" contains many abstracts of recent publications and meetings in the extended field of water management. The index includes subjects such as water resources, quality, monitoring treatment and supply, water use, sewage, industrial effluents and effects of pollution. Information: Water Research Centre, Stevenage Laboratory, Elder Way, Stevenage, Herts. SG1 1TH, England.

Congresses and Symposia

Municipal Wastewater Reuse Research Needs Workshop

University of Colorado, Boulder, Colorado, 18 - 20 March, 1975.

Information: US Environmental Protection Agency, National Environmental Research Centre, Cincinnati, Ohio 45268, U.S.A.

The Effects of Storage on Water Quality,

University of Reading, 24 - 26 March 1975.

Information: Water Research Centre, Medmenham Laboratory, P.O. Box 16, Ferry Lane, Medmenham, Bucks., SL7 2HD, England.

Technology and Management for Environmental Health Engineering in Hot Climates and Developing Countries, Loughborough University of Technology, 28 April - 4 July, 1975.

The full course consists of ten separate one-week modules on different topics.

Information: John Pickford MSc, University of Technology, Loughborough, Leicestershire LE11 3TU, England.

Second International Conference on Environmental Health Engineering in Hot Climates and Developing Countries. Theme: Water, waste and health in hot countries, Loughborough University of Technology: 21 - 24 September 1975.

Call for authors of international repute from developing countries, who are willing to prepare papers to be presented at the conference.

Information: John Pickford MSc, University of Technology, Loughborough, Leicestershire LE11 3TU, England.



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News from I.R.C.

INTERNATIONAL WORKING MEETING ON HEALTH EFFECTS RELATING TO DIRECT AND INDIRECT RE-USE OF WASTE WATER FOR HUMAN CONSUMPTION

This meeting was held in Amsterdam from 13-16 January, 1975, under the auspices of the International Reference Centre for Community Water Supply, and was attended by approximately 30 experts in analytical chemistry, toxicology, microbiology and epidemiology from 9 countries. Representatives of international organisations also participated in the meeting. It was the group's opinion that local water scarcity and increasing pollution of available drinking water resources would ultimately lead to an increase in the application of renovated waste water as a source for drinking water in several parts of the world.

Anticipating the possible consequences of this development, the participants discussed the potential health risks of organic, and inorganic micro-pollutants, and micro-organisms. Special attention was paid to toxic materials and organic micro-pollutants causing chronic toxic effects. One of the recommendations of the meeting as to research to be initiated or accelerated emphasized the necessity of investigations into the feasibility of epidemiological studies among population groups. Toxicological studies of individual water contaminants would also have to be carried out as well as studies e.g. of organic compounds found during disinfection. In this context also the necessity of high sensitive and selective biotoxical monitoring systems with rapid response were stressed. Finally the expert group recommended that the International Reference Centre should assume the role of International Coordinating Agency to further develop the objectives and final proposals of the meeting, identifying research groups at present working in the subject area, assisting in the approaches to organizations which may be able to provide funds and technical assistance, stimulating a rapid exchange of knowledge and coordinating the international activities in this field.

A report of the meeting will be published in due course.

Information: International Reference Centre for Community Water Supply, Nieuwe Havenstraat 6, Voorburg, The Netherlands.

Netherlands

COMPLICATIONS WITH PRECHLORINATION

Treatment at the Rotterdam Waterworks comprises storage, superchlorination, combined activated carbon addition and coagulation, filtration, cascade aeration and postchlorination.

In chlorinating the stored coloured raw water, J.J. Rook found that humic substances, which are very stable to biological decay and do not appreciably diminish during impoundment, were responsible for the formation of chloroform (up to 54 μ /l) and other haloforms, which may be harmful to health.

His publication entitled Formation of haloforms during chlorination of natural waters in Water Treatment and Examination, 1974, 23, 234-243. cautions that it may be necessary to restrict the chlorination of coloured waters and to remove the haloforms by intensive aeration of the treated water.

Information: Rotterdam Waterworks, P.O. Box 1166, Rotterdam, the Netherlands.

United Kingdom

DISINFECTION OF WATER MAINS

Mr. D.N. Harris of the Anglian Water Authority, Humberside Water Division was commissioned by the former British Waterworks Association Sub-Committee of Chemists (River Trent) to make an outline for good practice of disinfection of water mains for the use of water authorities and for training purposes by the National Water Council.

The following actions were discussed: precautions before and during mains laying; initial chlorination; sampling and examination of samples; quality criteria; repairs.

Information: Anglian Water Authority, Humberside Water Division, Town Hall Square, Grimsby, Lincs. DN31 1HL, U.K.

U.S.A.

DETERMINATION OF ENTERIC BACTERIA

R.P. Kenard and R.S. Valentine describe in Applied Microbiology, 1974, 27, No. 3, 484-487 a rapid and sensitive method for the detection of bacteria in water by isolating specific bacteriophage, which can be determined in as little as 6 to 8 hours. In a comparison study of total coliform, faecal coliform and total coliphage counts in samples which were collected from several geographic areas over a period of 2 years, a high degree of correlation was found, and it is suggested to determine the number of faecal coliforms by enumerating the phage.

TRACE METALS REMOVAL IN WATER TREATMENT

J.T. Connor discusses in Water & Sewage Works, 1974, 121, No. 10, 72-75 modifications in conventional water treatment processes to obtain a removal of trace metals which are harmful to health. Processes include sorption on incipient precipitates of hydrous aluminum, ferric and manganese oxides and on clays and sediment removed during coagulation and filtration, precipitation as oxides, carbonates, sulphides or phosphates by lime or soda addition, oxidation, ion exchange and adsorption as metallo-organic compounds on activated carbon.

New WHO Publication

Slow Sand Filtration, by L. Huisman and W.E. Wood, Geneva, World Health Organization, 1974. 122 pages. Price: Sw.fr. 16,-. French and Spanish editions in preparation. Available through WHO sales agents. Slow sand filtration has proved to be a simple, reliable, inexpensive and efficient method of water treatment under widely differing circumstances. The book describes the design, construction and operation of modern slow sand filters, the theories of biological filtration, and the various methods of cleaning filters, which range from simple manual techniques to advanced mechanical or hydraulic systems. It shows how slow sand filtration can be matched to any level of technological development. It is hoped that the new publication will encourage the greater use of this method of water treatment, especially in developing countries.

Bibliographies

Bibliography of hydrology 1970. International Association of Scientific Hydrology, Bundesanstalt für Gewässerkunde, Koblenz, 1973, 239 p., 700 ref. (in German).

Bibliography of hydrology 1972. International Association of Scientific Hydrology, Akademie der Wissenschaften der Deutschen Demokratischen Republik, Berlin, 1973, 77 p., 250 ref. (in German).

J.J. Geraghty and others, Water atlas of the United States Water Information Centre, Port Washington, N.Y., U.S.A.

Congresses, symposia, etc.

Annual Conference of the German Water Supply Association DVGW and DCW in collaboration with the Swiss SVGW (Wasserfachliche Aussprachetagung 1975). Basel, Switzerland, 19-21 March 1975.

Topics: Modern methods for groundwater abstraction; Drinking water supply from lakes; Hygiene of drinking water supply.

Information: DVGW, 6236 Eschborn, Frankfurter Allee 27, Federal Republic of Germany.

Symposium on the effect of storage on water quality, Reading, 24-26 March, 1975. Topics: Physico-chemical changes associated with storage; Biological changes associated with storage; Experimental work; Management of storage reservoirs.

Information: Water Research Centre, Medmenham Laboratory, P.O. Box 16, Ferry Lane, Medmenham, Bucks. SL7 2HD, U.K.

28th International Days of the Belgium Centre for Study and Documentation of Waters (CEBEDEAU), Liege, Ghent, 20-22 May, 1975.

Topics: Estimation of water pollution by biological tests; Management of water quality in industry; Pollution problems in beverage industries.

Information: CEBEDEAU, Rue A. Stévant 2, B-4000 Liege, Belgium.

National Symposium on Water Resources Problems in metropolitan areas, Rutgers State University, New Brunswick, N.J., U.S.A., June 30 - July 2, 1975.

International Water Conservancy Exhibition, Jönköping, 1-5 September, 1975.

Information: Elmia AB, Box 6066, S-55006, Jönköping 6, Sweden.



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News from IRC

PRACTICAL SOLUTIONS IN DRINKING WATER SUPPLY AND WASTE DISPOSAL (IRC data collection)
In times of hardship and insufficiency when the need is greatest, the ingenuity of man is challenged. This is a time when improvisations are made, adaptations proposed and when innovations are born. On such occasions the greatest effort is made in trying to provide for one's needs. The above undoubtedly also applies to the drinking water supply and wastes disposal field and certainly innovative ideas or practical solutions have been invented by man in an effort to obtain drinking water or the required sanitary services. Unfortunately these ideas, having served their purpose, tend to be forgotten once better times arrive, or they still may be applied in widely scattered places, but the information may not be available, as it may not be recorded or published. Needy conditions still exist in many parts of the world and information on practical solutions and self-help techniques as indicated above will certainly be helpful for engineers who have to work under less favourable conditions, and who with limited means have to cope with insurmountable demands.

It is with the above in mind that IRC is undertaking this data collection and solicits your cooperation to contribute an idea, a description of a process or a method of management or a sketch of a piece of equipment in drinking water supply and wastes disposal, which has struck you as having merit from the point of view of innovation, simplicity, cost-effectiveness, import-saving, etc. You may also care to mention an address where such a method is being applied or give names of persons who might be in a position to contribute information.

This will enable the Centre to follow-up.

With this joint effort, a guide could be compiled which may well become an important tool in the efforts to provide needy areas with the basic sanitary services they so require. Please contact IRC, Damsigt, 6 Nieuwe Havenstraat, Voorburg (ZH), with your suggestions or for more information on this activity. Data will be welcomed before 15 July, 1975.

Chile

DESALINATION BY FREEZING

Fournier J., Grange J.L. and Vergara, S. Describe in Desalination, 1974, 15, 167-175 a low-cost method for desalination of salt water in open pans by natural freezing during the night in North Chile. A production of 9 litres of fresh water per m² of pan surface area can be obtained after controlled melting during the day.

Federal Republic of Germany

BIOLOGICAL ACTIVE CARBON FILTRATION

M. Eberhardt and others of the University of Karlsruhe report on experiments on the "Use of a biologically active carbon filter in drinking water treatment". (in German) Its performance was compared with the traditional slow sand filter. Improved results of biodegradation are obtained if the water is pretreated with ozone. The reader is referred for further information to the Institute for Gas Technique, Firing Technique and Water Chemistry of the University of Karlsruhe, Karlsruhe.

Israel

HEALTH EFFECTS OF NITRATES IN WATER

Epidemiological studies indicate that infants consuming appreciable amounts of water high in nitrates in the form of powdered milk formulae show significantly raised methaemoglobin levels. This also applies to infants consuming tap water with a nitrate concentration of 45-55 ppm nitrate. Studies with rats on the acute and chronic toxic effects of nitrites indicate that nitrites can pass the placenta and cause raised methaemoglobin levels in the foetus; at the level of 200 ppm of Na NO₂, the rats showed deviations in heart blood vessels. Evidence presented in the study may raise questions as

to whether the current nitrate standard (45ppm) provides a sufficient margin of safety. The results are given by H.I. Shuval and N. Gruener in a report to the Office of Research and Development, U.S. Environmental Protection Agency, Washington DC 20460, October 1974.

Sweden

WORLD WATER PROBLEMS

This publication gives a report on the Nobel Workshop, which was held in Lidingo, Sweden on May 7-11, 1973. The following topics were covered in the workshop: 1) global distribution of water resources and potential development options including socioeconomic implications, 2) hierarchical models in the planning and management of water resources, 3) integrated use of natural sciences data in environmental water problems, 4) environmental influences. The report is distributed by the Swedish Natural Science Research Council's Editorial Service, Wenner-Gren Centre, Szcavagen 166, Box 23136, 10435 Stockholm.

U.S.A.

SURVEY OF LAKE REHABILITATION TECHNIQUES AND EXPERIENCES

The survey deals with general and specific methods which are applied in several countries to control eutrophication of lakes. It is published by the Wisconsin Department of Natural Resources as Technical Bulletin No. 75, 1974, R.

WHO publications

Trace elements in relation to cardiovascular diseases, R. Masironi ed. Geneva, 1974 (WHO offset publication No. 5), 45 p., price Sw fr. 7.-. This booklet outlines the status of a joint WHO and IAEA (International Atomic Energy Agency) research programme, for which a network of collaborating laboratories in several countries is established for collection of biological specimens and trace element analysis. It discusses the biomedical significance of results obtained in several projects including the relationship between cardiovascular death rates and chemical characteristics of local water supplies. Coordinative efforts in the investigations of trace elements in relation to cardiovascular diseases are recommended.

Congresses and Symposia

Second International Symposium on the use of ozone in water and waste water purification, Montreal 11-14 May 1975.

Information: CRESALA, University of Quebec, CS 8888, Montreal, Quebec, Canada.

Austrian Water Management Days 1975, Badgastein, 26-30 May 1975.

Theme: Water management and environment structure.

Information: Oesterreichischer Wasserwirtschaftsverband, An der Hülben 4, A-1010 Vienna, Austria.

Conference on Practical Aspects of Water Supply and Pollution Control in Southern Africa. Swaziland, 2-5 June 1975.

Information: The Secretary, Conference Planning Committee, P.O.Box 58, Mbabane, Swaziland.

Third European Waste Water and Waste Symposium with International Exhibition for Sewage and Waste Technique, Munich, 9-12 June 1975.

Topics: Water protection, its importance in environmental protection; Evaluation of classical water treatment in developing new treatment plants, etc.

Information: Kongressbüro EAS 1975, 15 Theresienhöhe, D-8000 München 2, Germany.

Marine disposal of sewage and industrial wastes, Sorrento 23-27 June 1975.

Information: Segreteria per i Convegni Sanitaria del Politecnico di Milano, Via F 111 Gorlini, 1, 20151 Milano, Italy.

International Water Conservancy Exhibition, Jönköping, 1-5 September 1975.

Information: Elmlia AB, Box 6066, S-55006 Jönköping 6, Sweden.

First International Conference on the internal and external protection of pipes. Hull, 8-10 September 1975.

Information: Organising Secretary 1st. ICPP, BHRA, Fluid Engineering Cranfield, Bedford MK43 0AJ, U.K.



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France

CONGRESS OF THE AGHTM

The 55th Congress of the General Association of Hygienists and Municipal Technicians will take place in Brest from 2 to 6 June 1975.

Reports presented for discussion will deal among other things with water supply of coastal cities; exploitation and sanitation of coastal zones for developing marine life.

Information: AGHTM, 9 Rue de Phalsbourg, 75017 Paris

Israel

BIOLOGICAL CONTROL OF RESERVOIRS BY FISH

Open canals and reservoirs are conducive to growth of algae, submerged plants, snails, clams and a variety of insects. This biological growth causes foul tastes and odours in the water, serves as a vector of human disease and causes blockage to various types of filters.

In cooperative operational projects, the Mekoroth Water Company and the Fish Research station of the Ministry of Agriculture in Dor have developed methods to control biological growths by placing various species of fish in open reservoirs:

Tilapia aurea, to reduce the quantity of organic matter at the bottom of reservoirs;

Tilapia nilotica (silver carp), to reduce the amount of algae in water;

Ctenopharyngodon idella (grass carp), to control the growth of submerged plants;

Milopharyngodon piceus (black carp), to eliminate snails;

Dicentrarchus punctatus, to reduce the reproduction of fish in reservoirs (the Dicentrarchus does not reproduce in fresh water).

The good results of the study are being applied to other open reservoirs in the country. Please contact the Mekoroth Water Company, P.O.Box 20128, Tel-Aviv for further information.

Pakistan

NATIONAL SYMPOSIUM ON WASTE WATER DISPOSAL

A national symposium on waste water disposal was organized by the Institute of Public Health Engineering and Research, on April 17, 1975, in which representatives of national organizations and departments participated. Please direct enquiries for further information to the Director, Institute of Public Health Engineering and Research, West Pakistan University of Engineering and Technology, Lahore 31.

Turkey

RURAL WATER SUPPLY IN TURKEY

The Ministry of Rural Affairs is involved in the supply of drinking water in Turkey through its "Village Drinking Water Works Department" (YSE). The present aim of YSE is to provide hygienic and clean potable water to 4000 villages every year. Following survey work preference is given to a supply in which groups of villages are provided with water from a single system by gravity. Designs are based on the villages' population 30 years hence. Criteria being used are daily consumption of 60 liters per person 50 liters per head of cattle and 15 liter per head of small livestock. A public fountain will be provided for every 200-300 population with a maximum distance of 300m between taps. Distribution piping is provided only to those villages which can meet the extra cost. As available springs have been used exhaustively, surface waters have to be relied upon for new supplies, for which additional operational and maintenance problems are anticipated.

United Kingdom

WATER JET BLASTING FOR PIPE CLEANING

Water jet blasting is being applied by the Birmingham Water Supply Division to clean corroded mains. With one street excavation some 30 meters of pipe can be cleaned in each direction by using a lightweight nylon re-enforced hose, a high pressure pump, a pump to draw off the loosened debris and a retro-jet nozzle. It is reported that the method was found to be quicker and cheaper than traditional techniques such as systematic flusing, foam swabbing and mechanical scraping, also the flexible hose can be pushed into angled junctions, which would normally be inaccessible.

United Nations

SECOND U.N. DESALINATION PLANT OPERATION SURVEY

The publication gives a technical and economic analysis of desalination plants in 22 countries with a capacity of not less than 10,000 U.S. gallons per day with data throughout 1968. Multi-stage flash distillation has the major application, to a minor extent followed by multi-effect distillation, vapour-compression distillation, reverse osmosis and electrodialysis. Three quarters of the thermal distillation plants are dual purpose in combination with power generation. Proportional energy cost for the plants is about one fifth of total production cost; for electrodialysis with brackish water as feed, this is one eighth. The report is published by the Department of Economic and Social Affairs, United Nations, New York, 1973, ST/ECA/171 (Sales No. E73. II.A.10. Price US\$ 5.00).

United States of America

INTERNATIONAL ENVIRONMENTAL GUIDE

This guide which is published by the Bureau of National Affairs, Inc., Washington DC, 1974, gives information on legal and other action which is taken in various countries also in international agreement to control pollution of the environment.

WATER QUALITY CRITERIA 1972

This handbook gives recommendations on water quality for purposes of recreation, public water supplies, agricultural and industrial use, aquatic life, etc. It is published by the U.S. National Academy of Sciences, U.S. Government Printing Office, Washington DC, 1973. Price U.S.\$ 12.80.

New WHO Publications available through WHO Sales Agents

"Guide to Simple Sanitary Measures for the Control of Enteric Diseases", by S. Rajagopalan & M.A. Shiffman, Geneva, World Health Organization, 1974, 103 pp. Price Sw.fr. 32.-. French edition in preparation.

A high incidence of enteric diseases associated with poor sanitation is characteristic of the disease picture in many of the developing countries of the world. The best ways of combating these diseases, from the cost-benefit and cost-effectiveness point of view, are the provision of safe drinking water, the practice of food hygiene and the sanitary disposal of excreta. The Guide provides a compendium of knowledge on simple sanitary measures that can be implemented with limited resources to control enteric disease; it is intended for the use of professional personnel responsible for public health and sanitary services in developing countries.

Conferences, Seminars, Symposia

Principles of Water Quality Control, Birmingham, 8-19 September 1975.

Information: Dr. T.H.Y. Tebbutt, Department of Civil Engineering, University of Birmingham, P.O.Box 363, Birmingham B15 2TT.

Instruments and Control Systems for the Water Industry, Reading, 15-17 September 1975.

Information: Water Research Centre, Medmenham Laboratory, Ferry Lane, Medmenham, Marlow, Bucks SL7 2HD, United Kingdom.



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Upper Volta

STUDIES ON ARTIFICIAL RAINMAKING

The Comité Inter-Africain d'Etudes Hydrauliques in Ouagadougou is undertaking a four-year study on artificial rainmaking.

Under favourable meteorological conditions cloud-seeding can promote condensation of supercooled water in certain cloud formations which may lead to more precipitation. In the first half of 1974, products such as urea, silver iodide, calcium chloride, sodium chloride and clay were being used for the experiments. Target zones are extending south-north from Ouagadougou to some 50 km south of Djibo. East of this area is considered as "control zone", while the potential zone under the cloud-seeding influence lies to the west.

In 3 to 4 years some 40,000 observations will be obtained from the three areas, which will be subjected to statistical analysis.

Information: Comité Inter-Africain d'Etudes Hydrauliques, P.O.Box 369, Ouagadougou.

U.S.A.

ECONOMIC BENEFITS OF WATER SUPPLY AND SEWERAGE PROJECTS

A report by Warford, Bahl and Coelen, published by the Syracuse University Research Corporation, Maxwell School of Citizenship and Public Affairs, examines the premise that investments in public sewerage and water facilities will be reflected largely in increased land values. This was done by first defining the theoretical issues, then attacking the problem through the use of an empirical model which compared property values in the "Project" area to those in a similar "control" area over a period which included the installation of the water/sewerage project in question. Original data from case studies in Nairobi and Kuala Lumpur were used.

Publications

INTERNATIONAL GLOSSARY OF HYDROLOGY

This publication of the UNESCO and the World Meteorological Organization (Publication No. 385, 1974, 411 p.) covers the work of World Meteorological Organization Committees and National Committees for the International Hydrological Decade. Hydrological terms are specified in English, French, Russian and Spanish.

VILLAGE WATER SUPPLY AND SANITATION IN LESS DEVELOPED COUNTRIES

A study by J. Warford and R. Saunders on "Village Water Supply and Sanitation in Less Developed Countries", to be published in the second half of 1975 by the Public Utilities Department of the World Bank, indicates that the major difficulties in village water supply and sanitation programmes are not technical, but rather administrative and financial. The problems are in large part due to the relative poverty of rural communities; their failure to appreciate and make proper use of potable water; the relatively high cost per consumer of village supplies as compared with urban supplies; the encumbered administration stemming from geographical dispersion; and undoubtedly most important, the common neglect of operation and maintenance due to the lack of proper allocation of budgetary resources, the lack of on-going technical assistance, and the lack of administrative attention. This paper which consists of a review of the current state of knowledge and of the experience of a number of less developed countries in the field of village water supply, concentrates on these areas, highlighting the factors which

are significant in determining the likelihood of success or failure of village water supply projects or programs, and their priority in national development planning. There is also a discussion of the problem of identifying and quantifying the benefits of investment in this field.

Since the best means of dealing with many of these issues remains a matter of debate, and in view of the considerable diversity of rural communities in less developed countries, the general approach of the paper is to draw attention to possible courses of action and approaches which Bank staff should consider in appraising such projects. The paper does not pretend to outline actual policies to be followed by the Bank in controversial areas, however, the intention primarily being to make operating staff aware of opposing points of view and of various possible implications of specific actions, so that they would be in a better position to exercise judgement in any particular case.

The paper is being widely circulated in order to attract comments to assist the Public Utilities Department in preparing guidelines for the appraisal of village water supply projects. It does not however, necessarily represent the views of the Bank.

COMMUNITY WATER SUPPLY AND EXCRETA DISPOSAL SITUATION IN THE DEVELOPING COUNTRIES

A COMMENTARY, by C.S. Pineo and D.V. Subrahmanyam, Geneva, World Health Organization, 1975 (WHO Offset Publication, No. 15). 41 pages. Price: Sw. fr. 12.-. French edition in preparation.

In 1971 and 1972 a global survey was carried out of community water supply and excreta disposal conditions and needs in the developing countries in both urban and rural centres. The statistical results country by country, depicting the situation as at the end of the year 1970, were published in the World Health Statistics Report, 1973, Vol. 26, No.11. The present publication is an analysis and commentary on some of the salient data presented in the report and considers, inter alia, prospects for reaching the Second United Nations Development Decade targets. It is hoped that this paper will be of some value to those concerned with planning and assistance for community water supply and excreta disposal programmes in the developing countries.

Annual Reports, Statistics.

1. Statistic results for 1973 of Swiss waterundertakings (in German) Swiss Association of Gas and Water Industry, 44 Grütlistrasse, 8002 Zurich, Switzerland.
2. P.Suchomel, Operating results for Austrian Water Works 1969-1973 in Gas, Wasser, Wärme, 1975, 29, no. 1, p. 20-22 (in German).
3. Department Report, 1973-1974 of the Department of Civil Engineering, University of Newcastle upon Tyne, Newcastle NE1 7RU, United Kingdom.

Congresses, Seminars, Symposia

National Water Well Exposition, New Orleans, 4-8 October 1975

Information: Mr. J. Lehr, National Water Well Association, 889 East Broad Street, Columbus, Ohio 43215, U.S.A.

International Conference on heavy metals in the environment, Toronto, 27-31 October 1975

Information: M.K. Ward, c/o National Research Council of Canada, Ottawa, Canada K1A 0R6

Eleventh American Water Resources Conference, New Orleans, Louisiana, November 9-15, 1975

Information: AWRA Meetings Coordinator, American Water Resources Association, 206, East University Ave., Urbana, Ill. 61801, U.S.A.

Symposium on real-time applications of weather radar to precipitation forecasting

and water resource management, WRC, 16-18 December 1975 incl. field trips to North Wales

Information: Mr. C.F. Cooper, WRC Medmenham Lab., P.O.Box 16, Ferry Lane, Medmenham, Marlow Bucks SL7 2HD, United Kingdom



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nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070 - 69 42 51, telegr.: worldwater the hague, telex: 33604

newsletter

No. 54 - June 1975

Canada

FISH BLOOD ANALYZED FOR LEAD

A method for measuring lead concentrations in fish blood is being studied by K. Aspila of the Canada Centre for Inland Waters, Burlington, Ontario. The amount of lead is measured by an atomic absorption spectrophotometer employing a heated graphite atomizer instead of a flame system. As a result, 5-50 microlitre blood specimens can be analyzed. The method is intended to detect lead in fish blood at concentrations of 50 to 5000 parts per billion. The project was initiated to help determine the sublethal effects of lead in rainbow trout.

Netherlands

NEW QUARTERLY REPORT

"Quarterly Report", a new issue of the Netherlands Government Institute for Water Supply, refers briefly to activities of said institute dealing with developing a master plan for the Netherlands; water supply and allied environmental problems; quality and quantity study of water resources; study and design of water treatment processes in relation to public health and ecological requirements; water supply problems in developing countries. The March issue describes a research programme on the re-use of waste water in the Netherlands; continuous toxicity monitoring systems for detecting acute toxic effects of polluted water on aquatic organism; use of experimental basins for limnological investigations. Copies of the Quarterly Report can be requested through the Librarian of the Government Institute for Water Supply, 6 Nieuwe Havenstraat, Voorburg (Z-H).

Peru

CEPIS MOVES INTO NEW OFFICE COMPLEX

The Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS) moved into its new quarters at Los Piños 259, Urbanización Camacho, Lima, in January of this year. The new office complex was built by the Government of Peru for the exclusive use of CEPIS. In addition to office facilities, the main building contains a spacious reference library, meeting rooms, exhibition mall, and cafeteria. Separate units will house a research laboratory, print shop and a 98-seat auditorium. The postal address remains CEPIS, Casilla 4337, Lima 100, Peru.

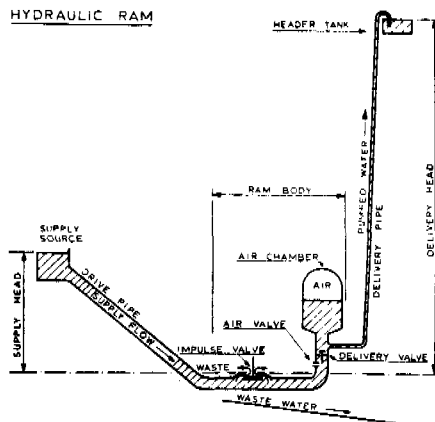
United Kingdom

HYDRAULIC RAM

If plenty of water from a mountain spring or stream is available, can the water needs for a mosque, school or small community at an elevated location be met, when no electricity or gasoline engine for driving a pump is there? The answer is yes, by using a hydraulic ram.

In an arrangement of a typical ram assembly potential energy of a supply flow it utilized to pump a part of it to an elevation which is higher than the supply head, while wasting a greater part of the drive water. Although hydraulic rams are commercially available they also can be constructed by simple means. This is described in a publication of the Volunteers in Technical Assistance (VITA), 3706 Rhode Island Ave., Mt. Rainier, Md 20822, U.S.A. The topic was dealt with in greater detail by S.B. Watt in "A Manual on the Hydraulic Ram for Pumping Water" which is an Intermediate Technology Group Ltd. publication. (9 King Street, London WC3E 8HN, United Kingdom)

HYDRAULIC RAM



The manual deals with design and construction of a simple ram pump from commercial pipe fittings, with site location, installation and maintenance. Not enough field experience is available however and information on this is welcomed.

News from WHO

WHO COLLABORATING CENTRE FOR SURFACE AND GROUND WATER QUALITY

The Canada Centre for Inland Water in Burlington, Ontario, Canada, has been recently designated by WHO as the WHO Collaborating Centre for Surface and Ground Water Quality. The main functions of this Centre will be to assist WHO on research and technical matters regarding the measurement and monitoring of water pollutants, water quality criteria, environmental and health effects of water pollutants, and water pollution prevention and control measures, including the planning and implementation of water pollution control programmes. The Centre will provide consulting services, organize interlaboratory comparisons, assist in the exchange of technical information and scientific data, and in the development of training programmes.

Conferences, Seminars, Symposia

XVth Congress of IAHR, Sao Paulo, 27 July-1 August 1975.

Information: Dr. Ayrton Canjani, Secr. Org. Com. of XVTH IAHR Congress, Caixa Postal 11014, Sao Paulo, Brasil.

Symposium on Maintenance of Water Quality, Cambridge, 9-11 September 1975.

Information: The Secretary, The Institution of Water Engineers and Scientists, 6-8 Sackville Street, London W1, United Kingdom.

Conference on Instruments and Control Systems, Reading, 15-17 September 1975.

Topic: Monitoring quality and quantity of surface and groundwaters; Instrumentation and automation in resource management, water treatment and distribution; Instrumentation and control in waste water treatment.

Information: C.F. Cooper, Water Research Centre, Ferry Lane, Medmenham, Marlow. Bucks SL7 2HD, United Kingdom.

Annual Conference Water Pollution Control Federation, Miami Beach, 5-10 October 1975.

Information: Peter J. Piecuch, 3900 Wisconsin Ave., N.W., Washington, D.C. 20016 U.S.A.

International Association on Water Pollution Research Conference, Sydney, 22-27 August 1976. Invitation to submit paper by September 1975.

Information: Dr. S.H. Jenkins, International Association on Water Pollution Research, Headington Hill Hall, Oxford OX3 0BW, United Kingdom.



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postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070 - 69 42 51, teleg.: worldwater the hague, telex: 33604

newsletter

No. 55 - July 1975

Canada

BIODEGRADATION OF NONIONIC SURFACTANTS STUDIED

A modified gas chromatographic technique for the analysis of nonionic surfactants was developed by the Analytical Methods Research Section of the Canada Centre for Inland Waters, Burlington, Ontario. The primary advantage of the method is that an analysis of the intermediate products of the biodegradation process can be made.

The method is now being tested on natural and waste water.

Little research has taken place in Canada on this class of surfactant, though it comprises approximately 25% of all surfactants used in Canada and the possible environmental impact is largely known.

India

BIBLIOGRAPHY

Recently published by the National Environmental Engineering Research Institute is the "Indian Literature in Environmental Engineering, Annual Bibliography 1972". It gives bibliographical details on 968 papers published in 84 Indian and 8 foreign periodicals and presented at 43 conferences, symposia and seminars. This extensive bibliography gives a comprehensive review of the Indian contribution in environmental engineering during 1972.

Iran

SIMPLE FILTER FOR INDIVIDUAL HOUSEHOLDS

At present Iran has over 55,000 villages of which almost half have a population of less than 100 inhabitants each. For such a large number of widely dispersed small communities water supply for drinking remains a problem.

The Department of Community Medicine at the Pahlavi University, Shiraz, which has a training course for village health workers for rural areas, has developed a simple water filter system for small communities and individual households. It consists of a drum fitted with a faucet and which is filled with layers of gravel, sand, charcoal and gravel. Turbid water from open canals and polluted streams have been successfully filtered. As much as 97 percent of the suspended matter and 98 percent of bacterial removal has been demonstrated. Drinking water safety is finally obtained by addition of a few drops chlorine solution. Depending upon the season and the amount of suspended matter in the raw water, filter runs can be as long as 6 months.

For information please contact: Dr. N.M. Merchant, Environmental Section, Department of Community Medicine, Pahlavi University, Shiraz.

Israel

REVERSE OSMOSIS STUDY

Mekoroth Water Co. has been studying the behaviour of different membranes (hollow fibre, spiral wound, tubular structured) in pilot-size reverse osmosis units with capacities of 20 to 100 m³ per day. The feasibility of the process was proven in the desalination of brackish water with high sulphate content (up to 800 mg per litre) and 2,500 mg per litre total dissolved solid. The information obtained will be useful in deciding on the type of bigger units with capacities up to 13,000 m³ per day, to be constructed.

Information: Mekoroth Water Company Ltd., 9 Lincoln Street, Tel-Aviv, Israel

Thailand

RATIONAL EFFLUENT AND STREAM STANDARDS FOR TROPICAL COUNTRIES

An investigation of rational effluent and stream standards for tropical countries was reported by M.B. Pescod of the Asian Institute of Technology in Bangkok. Water quality standards were reviewed and tentative stream standards proposed for use in developing countries of South-East Asia on the basis of legitimate water uses and adaptation of available data to local conditions. A survey of stream standards and water uses applied in the South-East Asian region indicated that few countries had adopted standards and practically no attempt had been made to adjust to suit local conditions. Experimental studies suggested that oxidation pond effluent would have a beneficial effect on the oxygen balance of a stream under tropical conditions provided that the algal concentration was not more than 1×10^5 cell/ml after dilution in the stream. Oxidation ponds were assessed as being more attractive than either trickling filter or activated sludge treatment plants for populations less than 175,000 and land rental costs of U.S.\$0.10 per square meter per year or less.

Information: Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand.

New Publications

Solid Waste Collection Practice 1975, APWA Institute for Solid Waste, 1313 E.60th Street, Chicago, Ill. 60637 U.S.A.

Publications of the Institute, Water Resources Research Institute, Mississippi State University, Mississippi, November 1974.

M. Bustanay, Saline Water Irrigation in Israel, Mekoroth Water Co.Ltd., Tel Aviv, Israel, 1974

Canada Centre for Inland Waters, 1973, Canada Centre for Inland Waters, Burlington, Ontario, 1974

Dictionary of the National Water Quality Data Bank (NAQUADAT), Inland Waters Directorate, Water Quality Branch, Ottawa, Canada, 1973

Guide to Data Holdings, Inland Waters Directorate Electronic Data Processing Committee, Ottawa, Canada, 1973

Safe Drinking Water Act, an amendment of the Public Health Service Act, Public Law 93-523, 93rd Congress, S.433, December 16, 1974

Conferences, Seminars, Symposia

Ibero-American Environmental Congress, 13-18 October 1975, Madrid. General topics: Air and radiation; water; industrial and domestic solid wastes; protection of the natural environment; physical planning and human activities.

Working group topics; Legislation and the environment - transfer of pollutant technology; training environmental specialists; research studies and projects. Information: Secretaria, Centro de Estudios del Medio Ambiente (C.E.M.A.), Raimundo Fernández Villaverde, 19 - Madrid 3, Spain.

Chemical Congress of the North American Continent, 30 November-5 December 1975, Mexico City, Mexico. Topic: "The Identification and Analysis of Organic Pollutants in Waters".

Information: N.I. McClelland, National Sanitation Foundation, Ann Arbor, Michigan, 48105, U.S.A.



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postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070 - 69 42 51, telegr.: worldwater the hague, telex: 33804

newsletter

No. 56 - August 1975

Federal Republic of Germany

INTERNATIONAL WATER STATISTICS 1968-1972

As similar problems present themselves in several countries for example with respect to water consumption, increased pollution, efforts required in guaranteeing the supply, the need was felt to compile comparable statistical data of water undertakings in the member countries of the International Water Statistics Committee.

In the above publication interesting data were compiled from the Federal Republic of Germany, France, Italy, Luxembourg, Netherlands, Austria, Sweden, Switzerland and Spain. Data on domestic water consumption per capita per day for example range from 77 litres for Belgium to 284 litres for Switzerland.

The National Waterstatistics 1968-1972 is published by the Bundesverband der Deutschen Gas und Wasserwirtschaft e.V. (BGW), Theodor Heuss Allee 90-98, 6 Frankfurt a.M. 90.

Kenya

SEMINAR ON SEWAGE TREATMENT IN KENYA

D.D. Mara and J.I. Fraser of the University of Nairobi, Kenya, report on a seminar in 1973 which dealt with sewage treatment and aspects of sanitary and environmental health engineering in East Africa. Data on design and operation of septic tanks, stabilization ponds, lagoons and oxidation ditches are reported, also research proposals for Kenya are suggested.

U.S.A.

VIRUS REMOVAL BY CHEMICAL COAGULATION

Removal of a bacteriophage, f2 virus was studied on a series of jar tests with the help of coagulants, polyelectrolytes and combinations of both. At the same time turbidity removal and chemical oxygen demand was also measured. The studies reported by D.W. York and W.A. Drewry in the Journal of the American Water Works Association 1974, vol. 66, 711-716, showed that an optimum dose of inorganic coagulants gave an effective virus removal; addition of polyelectrolytes gave little improvement.

INTERIM PRIMARY DRINKING WATER STANDARDS

Pursuant to the provisions of the Safe Drinking Water Act, the Interim Primary Drinking Water Standards were promulgated by the U.S. Environmental Protection Agency recently. The regulations set limits for turbidity, bacteria, some pesticides and inorganic chemicals. Maximum contaminant levels of inorganic chemicals and organic chemicals are as follows:

Inorganic Chemicals		Total Organic Chemicals	
Arsenic	0.05	Pesticides	0.7
Barium	1.00	Chlorinated Hydrocarbons	
Cadmium	0.01	Chlordane	0.003
Chromium	0.05	Endrin	0.0002
Cyanide	0.20	Heptachlor	0.0001
Fluoride	1.4-2.4	Heptachlor epoxide	0.0001
Lead	0.05	Lindane	0.004
Mercury	0.002	Methoxychlor	0.1
Nitrate (asN)	10.0	Toxaphene	0.005
Selenium	0.01	Chlorophenoxy:	
Silver	0.05	2,4-D	0.1
		2,4,5-TP	0.01

The Interim Drinking Water Standards are published in the Federal Register, vol.40, No. 51, March 14, 1975, Washington, D.C.

New WHO publication

"Community Wastewater Collection and Disposal", by Daniel A. Okun & George Ponghis. Geneva, World Health Organization, 1975. 287 pages. Price: Sw.fr. 42.-- French edition in preparation. Available through WHO sales agents.

Continuing the series of WHO guides on basic sanitary services, this publication describes in simple terms the fundamental principles and practices for waste water collection and disposal that are likely to be most appropriate for developing countries. Relatively little has been done in this field; design standards need to be developed in the light of special requirements and local conditions when communities recognize the need for a public wastewater collection and disposal system to replace the individual privies, cesspools, septic tanks, and similar constructions or the almost complete lack of sanitary facilities existing in many countries. The various chapters of this manual deal with such aspects of sewerage systems as financing and administration, theory and design, and operation. A wealth of line drawings (over 80 of them) illustrate and extend the descriptions, and technical data needed by the planner and engineer are given in a large number of tables. An extensive list of references to important information sources is contained in the publication.

Publications received

Drainage of Salty Soils, European Commission and Agriculture Working Party on Water Resources and Irrigation, Bucharest 1972, Food and Agriculture Organization, Rome 1973.

M. Bustanay, Saline Water Irrigation in Israel, Mekoroth Water Company Ltd., Tel Aviv, 1974

Choice and Adaption of Technology in Developing Countries, Development Centre of the Organisation for Economic Co-operation and Development, Paris 1974.

CEPIS Boletín Bibliográfico 1975, Vol.2, No.1, lists publications received by the Pan American Center for Sanitary Engineering and Environmental Sciences, Lima during the first quarter of 1975.

Risques pour la santé du fait de l'environnement par 100 spécialistes de 15 pays, World Health Organization, Geneva 1972.

Annual publications list 1974. Water Resources Research Centre, University of Hawaii, Honolulu.

M.G. McGarry, Developing Country Sanitation, International Development Research Centre, Ottawa, 1975.

Meetings

International symposium on industrial toxicology Lucknow 4th - 7th November 1975. Information: Director Industrial Toxicology Research Centre, Mahatma Gandhi. Marg P.B. no. 80, Lucknow 226001, India.

Second World Congress on Water Resources. Theme: Water for human needs (under the auspices of International Water Resources Association).

New Delhi, India, 12 - 17 December 1975.

Information: C.V.J. Varma, care of: Central Board of Irrigation and Power, Kasturba Gandhi Marg, New Delhi-110001, India.

Industrial Pollution Conference of the Water and Wastewater Equipment Manufacturers Association, Houston, Texas, March 30 - April 1, 1976.

Information: Carl Novak, WWEMA, 7900 Westpark Drive, Mc Lean, Virginia 22101, U.S.A.

For further information, please contact the respective institutes.



who international reference centre for community water supply

postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070 - 69 42 51, telegr.: worldwater the hague, telex: 33604

newsletter

No. 57 - September 1975

Australia

REDUCTION OF EVAPORATION

W. W. Mansfield of the CSIRO division of Atmospheric Physics, P. O. Box 4331, Melbourne, Victoria 3001, described in "Progress in Australian Hydrology 1965 - 1974" evaporation control by surface films in Australia. Usually mixtures of hexadecanol and octadecanol are used, which are commercially available and are degradable and non-toxic. They are white, somewhat waxy solids which float on water and from which monolayers spread spontaneously. With a fully developed monolayer, mean evaporation can be reduced by 50 per cent. Material is lost continuously however, mainly in being blown ashore. Treatment of larger storages up to 1000 ha in area can be done efficiently by blowing the powered chemicals. By keeping the reservoir covered for 30-50 per cent, evaporation can be reduced to 15-25 per cent. For smaller storages from 0,1 to 2 ha in area the method would be wasteful. In an experiment solid material is moored on the surface from which a film spreads out, the pellets often become coated however, so that further spreading is prevented. Tests are being made in which powdered solid is retained by a floating plastic mesh. Another promising study indicates that semi-coverage of a storage with foamed polystyrene sheets can reduce evaporation by 50% when the annual average evaporation is 1,2m. Estimated cost is \$0.80/m³ water saved. For further information, please contact the above mentioned institute.

Belgium

ACTIVATED CARBON IN WATER TREATMENT

J. Winkel described in "La Technique de l'Eau", 1975, No. 341, p. 45-48 (in French) the properties, uses and production method of activated carbon for removal of excess chlorine and ozone, pesticides, odours and tastes from drinking water. The water should pass a 3 metre bed of activated carbon at velocities of 10 to 30 m/hour. Application of granular activated carbon in treating industrial effluents is described, also methods of reactivation of the spent carbon. Design and cost calculations are given.

Canada

INVITATION FOR RESEARCH PROPOSALS

The International Development Research Centre is providing assistance to national researchers in developing countries especially if the studies will benefit the lower income groups such as rural people and squatter settlements in urban centres. Now the Centre is expanding its funding activities in the sanitation and water supply sector. Some areas of research which IDRC can support may be aspects of technology innovation or adaptation; institutional and financial infrastructures; social, technical and economic evaluation of existing projects; overall sector planning; training and manpower development; health education; community motivation and participation; and information collection, evaluation and dissemination. Institutions supported by IDRC should be directly involved in implementing of, or conducting research on sanitation and water supply. Further information may be obtained by writing to Dr. M.G. McGarry, IDRC/PHS, P. O. Box 8500, Ottawa, Canada, K1G 3H9.

Federal Republic of Germany

BIOLOGICAL ACTIVE CARBON FILTER

In cooperation with the Engler-Bunte Institute of the Technical University of Karlsruhe, the city of Bremen has been experimenting with biological active carbon filters in the treatment of drinking water. The idea was to look for alternatives to the existing slow sand filters. Equivalent results can be obtained with sufficient detention time and when sufficient biodegradable organic matter is present. The latter can be increased by pretreating the water with ozon. Non-biodegradable substances will limit the absorptive capacity of the carbon and this leads to a decrease of biological activity. The results of the study have been published in a German series publication of the Lehrstuhl für Wasser-Chemie am Engler-Bunte Institut der Universität Karlsruhe: Mr. Eberhart, "Studies of optimal combination of absorption, filtration and biological purification", and Mr. Eberhardt, S. Madsen, H. Sontheimer, "Studies on the application of biological active carbon filters in drinking water treatment". For further information please contact the Lehrstuhl für Wasser-Chemie am Engler-Bunte Institut der Universität Karlsruhe/Karlsruhe.

India

CAN REVERSE OSMOSIS BE USED FOR SMALL COMMUNITIES?

In certain areas of India the ground water is saline, rendering it unsuitable for consumption. The Central Salt and Marine Chemicals Research Institute at Bhavnagar studied the possibilities of the reverse osmosis process, in which water with low salt content is forced by pressure through specially developed membranes, leaving the bulk of the salt in the main stream. Cellulose acetate flat and tubular membranes have been cast which have a dense surface layer and a porous filled substrate. In a 750 gallons of water per day test plant, water flux of 10-15 gallons/sqft/day (0.02-0.03m³/m²/hr) was obtained with 90-95% of the salt rejected when saline water of 5000-7000 mg/l total dissolved solids contents is used. It is said that the required equipment can be built and operated with indigenous material and manpower. Capital investment and cost of water produced are present, which compare favourably with distillation. For information please contact the Central Salt and Marine Chemicals Research Institute, Bhavnagar.

United Kingdom

LOW COST LININGS FOR RAINWATER CATCHMENT

In many semi-arid regions catchment of rainwater in reservoirs is an important method for conserving water for the dry season. Problems with such reservoirs are losses by evaporation or seepage. In "Methods of creating low cost waterproof membranes for use in the construction of rainwater catchment and storage systems", D. Maddocks gives survey of methods applied to overcome these problems including the compaction of appropriate soils, the addition of chemicals to soils to improve their stability and water repellency, lining with synthetic rubber, polyethylene and PVC membranes, the use of various types of bitumen membranes, gunite, epoxy resin and sheet metal. Finally several techniques of covering small reservoirs and of controlling evaporation from open water storages are discussed. The publication can be obtained through Intermediate Technology Publication Ltd., 9 King Street, London WC2E 8HN.

U. S. A.

PURIFICATION BY AQUATIC PLANTS

Following studies in NASA's National Space and Technology Laboratories, water hyacinths will be used to remove nitrates, phosphates and other pollutants in a sewage lagoon in St. Louis. The plants will be exposed to a variety of chemical wastes during a month, collected and analysed to determine the enrichment in pollutants. Methods to utilize the crops are being studied such as conversion into Hydrocarbon gas, fertilizer. Reference: Water & Pollution Control, 1975, 113, No. 6, p. 23-25.

New Publications Received

"Methods for safe storage, transport and destruction/recovery of organomercurials and mercury contaminated waste", World Health Organization, Regional Office for Europe, 8 Schervigsvej, Copenhagen Ø, Denmark, 1975.

"The hazards to health and ecological effects of persistent substances in the environment-polychlorinated biphenyls", World Health Organization, Regional Office for Europe, 8 Schervigsvej, Copenhagen Ø, Denmark, 1975.

K. L. Zwintzsch, "Social costs in public water supply" (in German), Publication of the Institut für Wasserforschung GmbH, Dortmund and the Hydrologische Abteilung der Dortmunder Stadtwerke AG, 1973.

The Metropolitan Water District of Southern California, "Report for the fiscal year June 1973 - June 1974", Los Angeles, California, 1974

"Water Research Centre, Research Programme 1975/6", Water Research Centre, Medmenham Laboratory, Ferry Lane, Medmenham, Marlow, Bucks SL7 2HD, United Kingdom.

A.P. Aitken, Hydrological Investigation and Design of urban stormwater drainage systems, Australia Water Resources Council Techn. Paper No. 10, Australian Government Publishing Service Canberra 1973.

Annual Report 1974, PanAmerican Centre for Sanitary Engineering and Environmental Sciences, CEPIS, Avenida Salaverry 722, Casilla Postal 4337, Lima, Peru.

For further information please contact the respective institutes.



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postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070 - 69 42 51, teleg.: worldwater the hague, telex: 33604

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No. 58 - October 1975

India

TRAINING PROGRAMMES AND REFRESHER COURSES

As of 1975 a dozen courses will be offered each year by the National Environmental Engineering Research Institute. Objectives of the courses are to provide a training programme at which latest findings are disseminated and field engineers can update their knowledge. Some of the courses are: Water and Waste Water analysis; Industrial waste treatment; Plastics plumbing; Sewage treatment for plant operators; Process design in waste treatment; Air pollution control; Sewage farming; City refuse disposal; Preventive maintenance of water distribution systems; Environmental microbiology. Some ad-hoc courses are also given jointly with other organizations.

For information please contact the National Environmental Engineering Research Institute, Nehru Marg, Nagpur-10, India.

Federal Republic of Germany

ALTERNATIVE ENERGY SOURCES FOR WATER SUPPLY

Under sponsorship of the German Foundation for Industrial Development, an international conference was held in Berlin from 15 to 20 September 1975 on "Appropriate technologies for semi-arid areas: Wind and solar energy for water supply".

Alternative sources of energy are important for remote, scattered communities in semi-arid areas and where available water sources may be saline. Their use can in these cases compete against a supply of water by long pipelines and can very well be considered in cases in which logistics of fuel supply become difficult. In the development of the required techniques experiments in these problem areas and adaptation to local conditions are important. For this there is a need for technical cooperation and information exchange.

Assessment of the real needs for energy and local alternatives available should give the basic data required for planning.

The growing interest in the use of alternative energy sources is commendable and scientists and engineers in developing countries have a role to play in the development of the appropriate techniques.

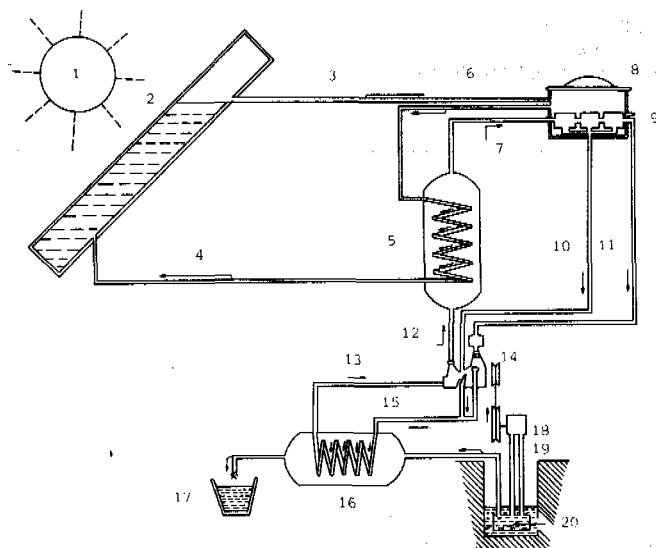
Information: German Foundation for International Development, Reiherwerder, 1 Berlin 27, Federal Republic of Germany.

Mexico

SOLAR PUMPS IN MEXICO

Extraction of water from deep wells by means of solar pumps seems feasible for conditions in the desert areas of Mexico. In the first solar installation in Sonora, solar energy is captured in a collector to heat incoming water to 60°C. The thermal energy is used for heating gasified butane to a pressure of 5,6 kg:cm² which will drive an expansion motor. Directly connected to this motor is a pump for recirculating the liquefied butane to the evaporator and a hydraulic press which is connected to a piston pump. The latter is submerged in the well (see flowsheet). Water to a depth of 80m can be lifted and the reliability of the installation is said to be comparable to a refrigerating system. Based on the first favourable results a large-scale introduction of solar pumps is planned by the Government. Thermodynamic and cost comparisons are presented in "Solar pumps, a reality in the Mexican deserts" a publication in Spanish of the Secretaría de Salubridad y Asistencia, Subsecretaría de Mejoramiento del Ambiente, Mexico City, Mexico.

Flowsheet of a solar pump installation



1. sun
2. collector
3. cold water
4. warm water
5. evaporator
6. -
7. warm butane gas
8. expansion chamber
9. oil filters
10. oil
11. warm butane gas
12. liquid butane (2,8 kg/cm², 29°)
13. liquid butane
14. solar engine
15. recycling pump
16. condensator
17. delivered water
18. hydraulic press
19. control pipes
20. piston pump

U.S.A.

BENEFITS OF WATER QUALITY ENHANCEMENT

In an EPA report the benefits of water quality improvement, with respect to recreation, aesthetics, property value, and ecology have been estimated. Based on the net social benefit obtained, the necessary measures for environmental protection can be proposed.

This publication by D.L. Jordening, entitled "Estimating water quality benefits", Socio-Economic Environmental Studies Series EPA 650/5-74-014, 1974, 86p, 134 references, may be obtained from the U.S. Government Printing Office, Washington D.C.

Price: US\$ 1.50

International Union for Health Education

HEALTH EDUCATION: EVALUATION AND FORECAST

"Twenty years of health education: evaluation and forecast" comprises papers which were presented at the VIIIth International Conference on Health Education, held in Paris in July 1973, reports on innovations in health education in several countries and gives recommendations of 21 working groups of the conference concerning health education methodology, planning and research in rural and urban environments; alcoholism, smoking and drugs; problems of professional preparation, evaluation and communication in health education, etc. The publication is in English, or multilingual with summaries in English, French and Spanish. Information: International Union for Health Education, 20 Rue Creuze, 75, Paris, 16^o Arrondissement.



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postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070 - 69 42 51, teleg.: worldwater the hague, telex: 33604

newsletter

No. 59 - November 1975

Japan

GUIDELINES FOR WATERWORKS TECHNICAL MANAGEMENT

In 1953 the first "Guidelines for Waterworks Technical Management" was edited by the Ministry of Welfare in its efforts to prevent outbreaks of enteric epidemics by recommending an improved management of waterworks in the whole country. To cope with technical development the guidelines have since been revised twice. As it was felt that the book would be useful in other countries as well, the Japan Waterworks Association decided to publish the latest edition in English (3rd printing 1975). Topics dealt with are: Management of raw water facilities; management of purification facilities; control of facility of distribution and transmission; control of service installation; management of mechanical and electrical facilities; management of measuring instruments; water quality control; hygiene management.

Reference: Japan Waterworks Association, 4-8-9- Kudan-Minami, Chiyoda-ku, Tokyo, Japan.

Netherlands

DETECTION OF ENTERIC VIRUSES IN WATER

Four concentration techniques, viz. polymer two-phase system, polyelectrolyte PE 60, alginate filters and nitro-cellulose membrane filters were compared for the detection and enumeration of viruses in water. The membrane filtration technique seems to be the most reliable and universally applicable method. A relatively high efficiency and reproducibility can be obtained with the method. The mean recovery percentage is found to be about 60%. The selected method is used in monitoring surface water and sewage in the Netherlands. During a test period of 8 months samples collected were found to be positive with a detected quantity of enteric virus in surface water varying from 25 - 120 p.f.u./l. For information please contact Mr. H.J. Kool, National Institute of Water Supply, 13 Parkweg, The Hague, The Netherlands.

UNICEF

UNICEF GUIDE LIST

"Guide List Olga", prepared in consultation with WHO, gives detailed specifications of equipment supplies and material provided by UNICEF to support rural water supply and sanitation projects in developing countries. It also covers supplies for general preparation of the programme (equipment for office, surveys, transport, field tests) and tools for construction and maintenance.

Information: UNICEF, United Nations, New York 10017, U.S.A.

WHO

TRAINING COURSE ON INFORMATION SYSTEMS

An Inter-Regional Training Course on the Collection, Analysis and Evaluation of Data on Community Water Supply and Wastes Disposal Services (for which WHO was the Executive Agency and UNDP the Funding Agency) was held in Voorburg, The Netherlands, from 6 to 17 October 1975, in the host institute of the International Reference Centre for Community Water Supply.

Attended by senior officials responsible for the planning of community water supply and sewage disposal programmes in 18 English-speaking countries, the course had as its objectives the provision of knowledge and concepts for the development of an effective information system for the planning of community water supply and sewage disposal programmes. Many developing countries possess various forms of data banks and statistics departments but lack effective operational information systems that serve decision makers in planning and management. WHO will eventually publish its draft "Guide on Information Systems for Planning and Evaluation of Community Water Supply and Community Wastewater Disposal Programmes" that was used as the main training document in the course. A similar course in French is being planned for 1976.

Publications received

"Pollution research index. A guide to world research in air, land, marine and freshwater pollution", Francis Hodgson, Guernsey 1975, 431p. (listing organizations in over 100 countries which are concerned with detection and prevention of pollution).

E. Phillips, "Survey of corrosion of prestressing steel in concrete water-retaining structures", Australian Water Resources Council Technical Paper no.9, Government Publishing Services, Canberra, Australia.

"Symposium on waste control: its importance in the planning and management of water supply systems", Proceedings of symposium held at the University of Reading, England, from 10-13 September 1974, published by the Institution of Water Engineers, 6-8 Sackville Street, London W1X 1DD, United Kingdom.

D.A. Caponera, Water laws in Moslem countries, Irrigation and Drainage paper 20/1, Food and Agriculture Organization of the United Nations, Rome 1973.

Indexed bibliography of the Office of Research and Development Reports updated to January 1975, U.S. Environmental Protection Agency, Office of Research and Development, Washington D.C. 20460.

Australian National Commission for UNESCO, Progress in Australian Hydrology, 1965-1974, Australia Government Publishing Service, Canberra 1974.

Requests for information on the above publications should be addressed to the relevant organizations.

Meetings

Water for arid lands (International Water Resources Association), Tehran, 8-9 December, 1975
Information: Dr. R. Hariri, Centre for Research and Laboratories, Ministry of Energy, Tehran, Iran.

A one week course on water supply and water pollution control in developing and industrial countries will be held at Loughborough University of Technology, January 19, 1976.
For further information, contact: Mr. John Pickford, University of Technology, Loughborough, Leics. LE11 3TU, England.



who international reference centre for community water supply

postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070 - 69 42 51, telegr.: worldwater the hague, telex: 33604

newsletter

No. 60 - December 1975

News from I.R.C.

APPROPRIATE TECHNOLOGY FOR DEVELOPING COUNTRIES

Sponsored by the University of Oklahoma/U.S. Agency for International Development and the International Reference Centre for Community Water Supply a global workshop on Appropriate Water and Waste Water Treatment Technology for Developing Countries was convened in Voorburg, The Netherlands from 17-22 November 1975. Attended by scientists, planners and representatives of international organizations with programmes in the drinking water supply and wastes disposal field, the meeting was intended to identify the role which appropriate technology can play and set strategies to help increase the current rate of rural water and sanitation coverage. The value of using techniques which are responsive to the resources of the country is recognized and community participation in programmes should be encouraged. In assisting the countries to develop and apply in-country solutions, a coordinating mechanism that would serve as a central body for exchange of socio-economic and technical information and for motivation of adaptive research and promotion of appropriate solutions is needed.

A methodology developed at the Oklahoma University was presented with which methods of water and waste water treatment appropriate with respect to materials, manpower and financial resources capabilities could be selected. The model which was to be validated, should be a valuable tool for design engineers to avoid costly mistakes in planning new supplies. The meeting finally gave priorities to 18 projects of studies and development in the water supply, sewage disposal and related socio-economic fields. Follow-up of recommendations will be a task of the IRC.

HEALTH IMPLICATIONS OF DIRECT AND INDIRECT RE-USE OF WASTE WATER

Recently published as I.R.C. Technical Paper Series No. 7 is the report of an International Working Meeting of Experts, held in Amsterdam, Netherlands, 13-16 January, 1975. The report reviews the current knowledge with respect to refractory water contaminants and the possible health effects relating to the direct and indirect re-use of waste water for human consumption. A detailed survey of maximum reported concentrations of organic, inorganic and micro-biological contaminants is included.

Also presented is a tentative evaluation of the health implications of the detected chemical compounds. Recommendations are made for specific toxicological and epidemiological studies as well as research on the efficiency of various advanced treatment processes in removing suspect chemical contaminants.

Copies of the report can be made available upon request.

Australia

DIRECT FILTRATION

The feasibility of treating Warragamba river water by means of a direct filtration process without conventional flocculation and sedimentation in order to supply the Sydney Metropolitan area with 3,2 million m³/day of drinking water is analyzed by E.W. Walder in the Journal of the American Waterworks Association 1975, No. 7, p. 353-359. Possible peak turbidity levels were simulated and optimized treatment methods proposed.

Sweden

ARTIFICIAL RECHARGE

In H₂O 1975, No. 19 p. 383-387 (in Dutch), Mr. A.J. Roebert reported on "Artificial recharge in Sweden", which has been practised there for over 80 years. The purpose of recharging surface waters into sand and gravel basins (eskers) which have high permeability rates, is to level off temperature differences in summer and winter and to improve water quality. During the periods when melting snow has considerably increased turbidity in river water, recharge is discontinued and stored water is used.

U.S.A.

HALOGENATED ORGANIC COMPOUNDS

The possible formation of halogenated organic compounds during chlorination of water is lately a subject of general interest, as these compounds may be hazardous to health. J.C. Morris has reviewed the literature (166 references) and in "Formation of halogenated organics by chlorination of water supplies, a review", Environmental Health Effects Research Series EPA-600/1-75-002, 1975, a publication of the U.S. Environmental Protection Agency, methods for minimizing the formation of these halogenated organics in public drinking water supplies are indicated. Proposals for research, with relation to this subject, are also included.

WHO

COMMUNITY WASTEWATER COLLECTION AND DISPOSAL

In developing countries only a minor part of the population has access to a public sewerage system and in rural areas there is a great need for sanitary facilities.

D.A. Okun and G. Ponghis describe in "Community Wastewater Collection and Disposal", principles and practices for wastewater collection and disposal that may be appropriate for developing countries and for which specific design standards are needed.

This WHO publication (price Swfr. 42.-) is obtainable through sales agents in many countries or through WHO, Distribution and Sales Service 1211 Geneva 27, Switzerland.

REGIONAL SEMINAR ON WATER POLLUTION

On March 1975 a WHO conference for the Western Pacific region was convened in Manila to assess problems of water pollution and draft proposals which will be useful for national and regional programmes.

The importance of providing an increased sewerage system and treatment facilities and control measures at a national level were recognized, also the setting up of water quality goals. Among the identified projects which are recommended are: the possible use of mangrove swamps for waste discharge, the re-utilization of waste water in atolls, the bio-accumulation of toxic substances in indigenous food.

Meetings, etc.

Hydrological methods for developing water resources management (international postgraduate course), Budapest, 1 February - 31 July 1976

Information: Institute for Water Resources Development, Rakóczi ut 41, P.O. Box 44, H1428, Budapest, Hungary

International symposium on arid lands irrigation in developing countries, Alexandria, 16-21 February 1976

Information: Mr. Gamul Abdel-Samie, organizing committee for the COWAR Symposium, 102, Kasr el Aini Street, Cairo, Egypt.

A 10 week course on "Technology and management for environmental health engineering in hot climates and developing countries" will be held at Loughborough University of Technology from April 26 - July 2, 1976. The four main topics to be discussed are: 1) Tropical Medicine and Hygiene, 2) Water Supply, 3) Equipment, Techniques and Management, 4) Sanitation, Sewerage and Waste Treatment.

For further information, contact: Mr. John Pickford, University of Technology, Loughborough Leics. LE11 3TU, England.



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nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070-694251, telegr.: worldwater the hague, telex 33604

newsletter

No. 61 - January 1976

HAPPY NEW YEAR

The staff of the International Reference Centre wish all the readers of the Newsletter a happy and prosperous new year. During five years now, the Newsletter has been distributed all around the world, today in English, French and Spanish. Many an information item during that period has found its way to almost 7000 readers. We should like to thank all those who have assisted us during this period in this work and we hope to continue to pass your information on to others also in 1976.

Staff changes: In 1975 the following staff members joined the IRC: Mr. J. Haijkens, former public health engineer with UNESCO in Sri Lanka; and Mr. E.H.A. Hofkes, formerly with the Cape Town Water Undertaking in South Africa; Mr. E.L.P. Hessing of the Ministry of Foreign Affairs of the Netherlands has been detached for service with the IRC since December 1974. Mr. A. Kepinski left the Centre at the end of the year.

The IRC will this year work on a variety of subjects. The use of appropriate technologies in developing regions will be actively encouraged. Research and demonstration projects on slow sand filtration and public standpipes will be continued; a new project on handpumps has just been started. A coordination project on the health aspects of the re-use of waste water will be developed. Furthermore, a start will be made with activities in the training field and in the course of the year, a seminar will be held for participants from developing countries.

The information exchange function will be further developed and improved. The Newsletter forms part of it and your contribution will form an essential input.

The International Water Supply Association

First formed in Europe shortly after World War II, the Association is a non-governmental organization for the promotion of cooperation between water supply organizations on an international basis, which now has members in over 70 countries.

Among its objectives are : to improve knowledge regarding public water supplies by concerted action, to secure an exchange of information and encourage communication and better understanding between professionals in the public water supply field.

Every two years an International Water Supply Congress and Exhibition is organized, in which papers on selected topics by specialists are discussed. The scientific work of the Association is carried out by ten sub-committees under the direction of the Scientific and Technical Council. The sub-committees on Education and Training and on Water Supplies in Developing Countries have a particularly strong interest in the problems of the developing regions of the world.

In AQUA, the Association's quarterly journal, news and feature articles of international interest on all aspects of water supply are reported, together with activities of the Association.

Membership includes corporate members (national or international associations), associate members (individual water undertakings or authorities) and individual members. The Association particularly welcomes applications for membership from individuals and organizations in developing countries, for which information can be supplied by the Secretary General IWSA, 1 Queen Anne's Gate, London SW1H 9BT, England.

INTERNATIONAL WATER SUPPLY CONGRESS 1976

The 11th International Water Supply Congress, convened every 2 years by the International Water Supply Association, will be held in Amsterdam, the Netherlands from 13-18 September 1976. This Congress is expected to be the largest and most extensive yet held by the Association. In conjunction, the AQUATECH, a comprehensive water supply and water technology exhibition will provide a worldwide background to the International Congress.

Information: IWSA, 1 Queen Anne's Gate, London SW1H 9BT, England.

United Nations

THE USE OF SOLAR AND WIND ENERGY

The U.N. Economic and Social Commission for Asia and the Pacific (ESCAP) Secretariat, Bangkok 2, Thailand, is preparing an expert working group meeting on the use of solar and wind energy, which will be held in Bangkok from 2-9 March 1976. The group will assemble and analyze information particularly on small-scale technology applicable in rural development (such as low cost water pumping methods) and identify areas where research and development are likely to produce beneficial results. The information will be used by the countries in the region in making feasible proposals for wind and solar energy utilizations. Any papers, designs and information that may be helpful, including addresses of institutes that work on the subject, are welcomed, and can be sent to ESCAP directly (Energy Resources Section) with a copy to IRC, or through the IRC, P.O. Box 140, Leidschendam, Netherlands.

New Journals

Water, Journal of the National Water Council, 1 Queen Anne's Gate, London SW1H 9BT, England

Noticias sobre ingenieria sanitaria y ciencias del ambiente, Newsletter of the Pan American Center for Sanitary Engineering and Environmental Sciences CEPIS, Casilla Postal 4337, Lima 100, Peru

Water International, magazine of the International Water Resources Association, IWRA Business Office, 311 Illinois Building, 133 North Neil Street, Champaign, Ill. 61820, U.S.A.

Meetings, exhibitions

Water 76, International Water Exhibition
Stoneleigh, 27-29 May 1976

Information: The Exhibition Organiser Water 76, National Agricultural Centre, Stoneleigh, Kenilworth, Warwickshire CV8 2LG, England

Aqua-therm 76 exhibition,
Vienna, 1-4 April 1976

Information: Wiener Messe A.G., Messeplatz 1, A-1071, Vienna 7, Postfach 124, Austria

XVth Interamerican Congress for Sanitary Engineering
Buenos Aires, 20-25 June 1976

Information: Asociacion Interamericana de Ingenieria Sanitaria (AIDIS)
Seccion Argentina, Cerrito 1250, Buenos Aires, Republica Argentina

Conference on Groundwater Quality - Measurement, prediction and protection
Reading, United Kingdom, 6-8 September 1976

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

Information for the Water Industry

Reading, United Kingdom, 22-23 March 1976,

Topics: Needs of users of published information; Information work in action; Water information worldwide; Developments in information handling

Information: Conference Organiser, Water Research Centre, Medmenham Laboratory, Henley Road, Medmenham, P. O. Box 16, Marlow, Bucks, SL7 2HD, England

Flotation for water and waste treatment

Felixstowe, England, 8-10 June 1976

Information: Conference Organiser, Water Research Centre, Medmenham Laboratory, Henley Road Medmenham, P. O. Box 16, Marlow, Bucks, SL7 2HD, England.



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nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070-69 42 51, telegr.: worldwater the hague, telex 33604

newsletter

No. 62 - February 1976

I.R.C.

TWINNING SYSTEM

For some time, the IRC has been promoting bilateral contacts between water undertakings in developing countries and similar undertakings in industrialized countries. The aim is to establish a form of cooperation, to come to an exchange of views and experiences, and to acquire for both sides a better understanding of the problems encountered in a different environment and to create a training possibility by temporarily exchanging personnel at different levels on an individual basis.

Information: International Reference Centre, P.O. Box 140, Leidschendam, the Netherlands.

Canada

BIBLIOGRAPHY ON FILTRATION

"Tentative Bibliography on Filtration and Some Related Subjects" edited by Andre Leclerc, is a publication of the Division of Environmental Engineering, Department of Civil Engineering of the Ecole Polytechnique de Montreal, CP501 Snowdon Montreal 248, Canada.

It is a literature survey on filtration and related subjects such as coagulation and sedimentation and lists publications from periodicals published in the U.S.A., England, Canada and France in the period 1930-1973.

India

SMALL TREATMENT PLANTS

An economical design of an "Unconventional 0.50 mgd treatment plant for Ramtek Town, Nagpur" was described by J.N. Kardile in the Journal of the Indian Water Works Association, vol. VI, No. 1, p. 53-59, 1974.

Chemical flocculation of a moderate turbidity raw water (up to 500 units) was carried out in an upflow filter in which the flocs settled in and on top of the coarse gravel beds, resulting in an effluent of less than 30 turbidity units. In the adjacent downflow dual-media filter the overflow of the first filter passes a crushed coconut shell layer (size 1.5-2 mm) and a supporting sand layer. Crushed coconut shell is cheaper than anthracite or bituminous coal. Filtration rates of 4.5 cm³/m²/hr have been found with filter runs of 30 hours and head loss of 60 cm water. Encouraging results have been obtained with the system, which was built at one third of the cost of a conventional plant.

The International Reference Centre is undertaking a study of and collecting data on small treatment plants and information on systems which would be suitable for rural areas and small towns (see also our Newsletter No. 55 on Iran) are welcomed at the IRC, P.O. Box 140, Leidschendam, the Netherlands.

FLUORIDE IN DRINKING WATER

K.A.V.R. Krishnamachari of the National Institute of Nutrition, Hyderabad, reported a disease called "Genu Valgum" in 120 villages in the districts of Prakasan and Nalgonda in Andhra Pradesh, which affected the legs of the victims. Excessive fluoride in drinking water from the village wells was identified and in some villages up to 17 percent of the population was afflicted. A recommendation was made to leave existing drinking water sources and use irrigation canal water in fluoride-endemic villages.

RECHARGE OF AQUIFERS

In the state of Gujarat, excessive abstraction of groundwater has led to lowering of the water level (up to 3 meters per year in Ahmedabad) and even to intrusion of seawater (Saurashtra). Artificial recharge has been recommended as a new practice in India. A pilot scheme using the injection method in wells has been suggested at Ahmedabad and near Patan and the Vijapur area has been selected for recharge by flooding. To assess rates in confined aquifers, computer studies were undertaken using data from observations during 1959 to 1972. In the coastal areas of Saurashtra flooding has been recommended by constructing check dams.

Peru

NATIONAL PLAN FOR RURAL WATER SUPPLY

The Peruvian government has initiated the third stage of the national plan for rural potable water supply. It includes studies, designs and the execution of approximately 239 systems of potable water supply for some 270 communities that vary between 400-2,000 inhabitants. The total 4 year plan will benefit 2,287,000 inhabitants in 1,105 rural areas. The programme considers active participation of the communities during the execution of the work a fundamental aspect. Local administration boards will take care of the operation and maintenance afterwards.

United Nations

MODELLING OF WATER DEMANDS

At a UNDP/UN Interregional Seminar on River Basin and Interbasin Development, held on September 16-26, 1975, at Budapest, Hungary, G.W. Reid and M.I. Muiga discussed "Aggregate modelling of water demands for developing countries utilizing socio-economic growth patterns". A model providing aggregate, or planning level estimates of major water requirements is described.

The basic inputs to the model are sixteen socio-economic parameters representing data that are generally available at a national or basin level in developing countries. These inputs identify four socio-technological activity levels; the status of socio-economic development is used to identify municipal, agricultural and industrial gross water requirements. The normalized requirements and the normalized resource capabilities in terms of water, energy, arable land, metal and petro-chemicals are used as constraints on the projected system. The output is planning level information on total and three basic categorical water requirements that are in balance with the socio-economic growth of developing countries. The model is presently undergoing technology and user validation at global sites.

The proceedings of the seminar are available from the United Nations Economic and Social Affairs, Center for Natural Resources, Energy and Transport, United Nations, New York, New York, U.S.A.

U.S.A.

WATER RESOURCES OF THE WORLD

Edited by F. van de Leeden, the book gives selected statistics on water availability and use. Stream flow data are also available for most countries.

Publication by Water Information Center Inc., Port Washington, N.Y., 1975

Conferences

XXIXth International days, Belgian Study and Documentation Centre for Water, Liege, 24-28 May 1976. Topics: Thermal pollution; Legislation about air pollution; Corrosion problems by tap water in building installations; Effluent water treatments.

Information: CEBEDEAU, Rue A. Stevart 2, 4000 Liege, Belgium.

Processing and use of plastics in building

New Delhi, India April 12-May 8, 1976: Training programme; 10-15 May, 1976: Seminar

Information: Mr. M.C. Verghese, Chief Chemical Industries Section, Industrial Operations Division, UNIDO, P.O. Box 707, A-1011, Vienna, Austria.

Third National Groundwater Quality Symposium

Las Vegas, 15-17 September 1976

Information: NWWA, 500 W. Wilson Bridge Road, Suite 135, Worthington, Ohio 43085, U.S.A.

Publications

Guidelines for protection zones for drinking water, Part 1 - Groundwater, Part 2 - Impounding reservoirs, Part 3 - Lakes. Deutscher Verein für Gas- und Wasserfachmännern. Eschborn 1975. Federal Republic of Germany.

Design of water resources projects with inadequate data: Proceedings of the Madrid Symposium June 1973, 2 volumes. United Nations Educational, Scientific and Cultural Organization, Paris 1974. (in English and French)

International Water Statistics 1968-1972. Bundesverband der Deutschen Gas- und Wasserwirtschaft. Frankfurt-am-Main 1975 (in German). Contains statistics and summaries of recent developments in 11 European countries.



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postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070-694251, teleg.: worldwater the hague, telex 33604

newsletter

Newsletter no. 63 - March 1976

Canada

HIDDEN WATERS IN ARID LANDS

The Association of Geoscientists for International Development (AGID) held a workshop on ground water research needs in arid and semi-arid zones, in Paris on 25th November, 1974. The objectives were to single out some specific research needs in relation to the use and management of ground water in arid and semi-arid lands, and to focus the attention of the geoscience community on the hydrological effects of drought. The report of the workshop includes details on the availability of groundwater, groundwater quality and sources, the environmental and cultural impact of ground water development, and coping with drought. Also included are conclusions and recommendations relevant to the research needed to accelerate and guide groundwater use and development. For more information write to: Dr. A.R. Berger, Department of Geology, Memorial University of New Foundland, St. John's, Newfoundland, Canada.

Federal Republic of Germany

FLUORIDATION OF DRINKING WATER

In Schriftenreihe Wasser 1975 no. 8 (in German) of the German Association of Gas- und Water Engineers (DVGW), some 500 references are assessed on the advantages and disadvantages of fluoridation. The review also gives information on the practice of fluoridation in some European countries and the U.S.A.

Information: DVGW, Frankfurter Allee 27, 6236 Eschborn 1, Federal Republic of Germany.

United Kingdom

DUAL WATER SUPPLY

In "Dual water supply systems, study of the technological and economic factors in supplying two qualities of water to households in the United Kingdom", A.K. Deb and K.J. Ives of the University College, London, developed a methodology to compare the economics of single and dual water supply systems. Important parameters in developing a model are water quality, treatment and distribution costs and ratio potable to non-potable water consumption. Further study is required on the safety of the system with respect to health, social impact and ultimate cost.

U.S.A.

DIATOMACEOUS EARTH FILTRATION

Tastes and odours caused by blue-green algae can most effectively be removed by filtration through coarse diatomaceous earth. Tests in this respect have been carried out in a Massachusetts water supply and reported by R.H. Culver in Chemical Engineering Progress (71), no. 12, 51-54, 1974.

WHO

COMMUNITY WATER SUPPLY AND EXCRETA DISPOSAL SITUATION IN THE DEVELOPING COUNTRIES. A COMMENTARY BY C.S. PINEO AND D.V. SUBRAHMANYAM. GENEVA, 1975, 41 PAGES.

(WHO offset Publication No. 15) Price: Sw. fr. 12.--

While it has long been known that the developing countries have inadequate water supply and excreta disposal facilities, little statistical information has been available to demonstrate the full extent of the problem. A 1962 WHO survey gave a picture of the urban water supply situation in 75 developing countries. A more comprehensive survey of the water supply and excreta disposal situation in urban and rural areas in 1970 was carried out in 1971 and 1972, and the statistical results were published in the "World Health Statistical Report" (26 (11): 1973). The analysis of the data and the conclusions to be drawn from them are covered in the publication under review.

The survey was carried out by means of two questionnaires - one on water supply, which was answered by 91 countries, and the other on excreta disposal, which was answered by 61 countries. Since the national data were often incomplete they constitute only a rough guide to the situation, but with all its inaccuracies and inadequacies the information obtained from the WHO survey is the best that is available today. The regional and global summaries will encourage countries to establish targets and will help to direct international assistance to the areas where it is most needed.

Even in the towns of developing countries there remain a large minority of people not served with public water supplies or any hygienic means of excreta disposal, while in rural areas the overwhelming majority are without such services. Comparison of the survey results with those for 1962 shows that definite progress has been made in the provision of piped water in urban communities, but the authors conclude that the present investment level is still insufficient for governments to meet the targets they have set for water supply and sewage disposal for the decade ending in 1980, particularly in the rural areas.

New publications

Planning, design and operation of comprehensive monitoring systems of water quality (in Spanish), CEPIS, Casilla 4337, Lima 100, Peru

Natural polymers and their application as coagulant aids (in Spanish), CEPIS, Casilla 4337, Lima 100, Peru

Proceedings of the 95th annual conference Minneapolis, June 1975, American Waterworks Association, Denver, Colorado, U.S.A.

Conferences

Annual Conference of the Philosophical Society of the Sudan on Water Quality and Risks of Water Pollution in the Sudan, Khartoum, 17-22 April, 1976.

Information: National Council for Research, P.O. Box 2404, Khartoum, Sudan

Symposium on "Towards Absolute H₂O", Lane End, United Kingdom, 12-13 May 1976

Information: Conference Secretary, The Lorch Foundation, Lane End, Nr. High Wycombe, Buckinghamshire HP14 3JH, United Kingdom

VIIIth Conference of the International Association for Water Pollution Research, Oxford, United Kingdom, 20-27 August 1976

Information: IAWPR, Headington Hill Hall, Oxford OX3 0BW, United Kingdom



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postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070-694251, teleg.: worldwater the hague, telex 33604

newsletter

Newsletter no. 64 - April 1976

I.R.C.

INTERMITTENT OPERATION OF SLOW SAND FILTERS

Recently the IRC has published an English translation of Report No. 118 of the Dortmunder Stadtwerke A.G., Dortmund Municipal Waterworks, by Dr. Karlheinz Schmidt, on "Intermittent operation of slow sand filters for artificial recharge of groundwater". Experiments conducted on a full-scale installation in which the filters are periodically filled and drawn resulted in an improved quality of the water and a limitation of algal growth. The beneficial effect of using gravel filtration as pre-treatment is also mentioned.

Information: IRC, P.O. Box 140, Leidschendam, the Netherlands, or Dr. K. Schmidt, Dortmunder Stadtwerke A.G., 5841 Geisecke/Ruhr, Federal Republic of Germany.

Sri Lanka

LOW COST TUBE WELLS

A Denis N. Fernando of the Ministry of Irrigation, Power and Highways, describes the use of bamboo, hollowed Arecanut tree trunk, clay pipe and PVC pipe for low-cost tube wells, which can be made with local resources and utilize the skills of village smith or potter. Clay pipe (9 cm diameter and 45 cm long sections with slits 10 cm long and 2 mm wide) is recommended, as it is durable and inexpensive (Rs 500 per well including handpump). The average discharge obtained is about 4 m³ per hour and the water can be abstracted with handpump (capacity 1,8 m³ per hour, cost Rs 250), windmill pump (Rs 2000 incl handpump) or electric pump (Rs 1500). The tube well has been designed for 20 m depth. In view of the limited number of rigs available a low cost drilling kit for manual handling was developed for use in soft rock and semi consolidated formations (alluvium). The well can be dug by three men in one or two days.

United Kingdom

NEW WRC DIVISION: WATER QUALITY & HEALTH

A new division on Water Quality and Health was formed in the Medmenham Laboratory of the Water Research Centre. The creation reflects the growing importance of quality aspects and the current concern about possible health effects of some water constituents. Four sections of the new division are: health Effects, Micropollutants, Analytical Development and Analytical Services.

U.S.A.

REMOTE SENSING

The U.S. Geological Survey through the EROS Data Centre at Sioux Falls, South Dakota is offering "International Remote Sensing Workshops" for participants from developing countries from 3-28 May and 13 September-8 October, 1976. The emphasis is on the use of data obtained with the LANDSAT satellite, which is circling the earth (ERTS-1 programme). Evaluation of space images obtained is useful for different fields, especially when rapid coverage of a land area is necessary, such as for regional planning, agriculture, forestry, demography, environmental protection and exploration of minerals and groundwater.

Applications for the workshop should be sent to: John A. Reinemund, Chief Office of International Geology, U.S. Geological Survey, National Center No. 917, Reston, Virginia 22092.

A short one-week introduction course with similar aims is offered every month by the Purdue University, West Lafayette, Indiana.

Information: Douglas B. Morrison, LARS, Purdue University, West Lafayette, Indiana 49906, U.S.A.

International Bank for Reconstruction and Development

MEASUREMENT OF THE HEALTH BENEFITS OF INVESTMENTS IN WATER SUPPLY

While it has been well established that water can be a vector of disease and that the provision of a safe and adequate supply is one of the essentials for protection of the public health, efforts over many years to quantify the health benefits permitting prediction of the likely effects on health of such supplies have been unsuccessful. In May 1975 the World Bank, 1818 H. Street N.W., Washington D.C. 20433, U.S.A. convened a panel of experts in medical epidemiology, sanitary engineering and economics to advise whether the impact of water supply investments on health could be reliably predicted and quantified so as to assist in development planning, and, if so, what field studies and methodologies would be appropriate. The panel, concluded that the benefits could not be quantified given the present state of knowledge, and that studies to establish a rigorous relationship between water supply and health would be extremely expensive and their conclusions would be of doubtful application. The panel recommended that, in order to gradually build up knowledge in this area, the Bank might be associated with initially modest impact studies in which one or two diseases are closely analyzed.

New publications

The effects of storage on water quality. Proceedings of the Water Research Centre Symposium held at Reading. March 24-26, 1975; Water Research Centre, P.O. Box 16, Medmenham, Marlow, Bucks, SL7 2HD, United Kingdom

World water balance: mean annual global continental and maritime precipitation, evaporation and run-off, Baumgartner A. and Reichel E. Elsevier Publ., Amsterdam 1975

Books on water and waste water, National Centre for Scientific and Technical Documentation, CEBEDOC, Boulevard Frere-Arban, 3, B-4000 Liege, Belgique.

Conferences

IXth International Conference on Health Education, Ottawa, 29 August - 3 September 1976.
Information: Canadian Organizing Committee, IXth International Conference on Health Education, P.O. Box 2405, Station D., Ottawa, Ontario, Canada

"Application of New Techniques in the Development of Water Resources in Arid Zones", Advanced Course, August - September 1976
Information: The Desert Research Institute, Sede Boqer, Ben Gurion University of the Negev, Israel.

Annual Conference and Exhibition 1976, Blackpool, United Kingdom, 13-17 September 1976
Topics: Internal and external effects of water reorganization (U.K.); Approach to pollution control and legislation (EEC and U.S.A.)
Information: Institute of Water Pollution Control, General Secretary, 53 London Road, Maidstone, Kent ME16 8JH, United Kingdom



who international reference centre for community water supply

postal address: p.o. box 140, IJersdendam, the Netherlands
nw havenstraat 6, Voorburg-2112 (the Hague), the Netherlands
telephone: 070-694251, teleg.: worldwater the Hague, telex 33604

newsletter

Newsletter No. 65 - May 1976

I.R.C.

INTERNATIONAL WORKSHOP ON HAND PUMPS

Under the auspices of UNEP and WHO, the IRC will be holding an international workshop on hand pumps, from 12-16 July, in The Hague, the Netherlands. The meeting will be attended by experts on hand pumps and their use in rural water supply, both from developing countries and the international organizations that provide assistance to rural water supply programmes. The workshop is to review a comprehensive treatise on hand pumps for water supply use in developing countries that has been prepared, under a contractual arrangement with IRC, by Dr. F.E. McJunkin. Called "Guidelines on hand pumps" the document is intended for use in support of hand pump development work, demonstration projects and rural water supply schemes, by educational workers, head quarters and field staff alike. Some subjects covered are: types of hand pumps; hand pumps: state of the technology; installation, operation and maintenance; research and development on hand pumps; (local) manufacture of hand pumps. It is expected that follow-up activities such as demonstration projects and cooperative programmes will be planned at the workshop.

Australia

SELECTION OF TURBINE PUMP MATERIALS

"Guidelines for the selection of turbine pump materials for use in ground waters" is a report by G.J. Kelly and R.G. Kemp of the Australian Water Resources Council (publisher: Australian Government Publishing Service, Canberra 1975). It reports the results of studies aimed at relating the quality of ground water with corrosion of pump and well screen. No clear relationships were found with the parameters conductivity, chloride and dissolved oxygen content, whereas pH and Langelier index are direct indications of the corrosive quality of the water.

Egypt

RIVER NILE STUDIES

A jointly sponsored project by the U.S. Environmental Protection Agency and the Ford Foundation is investigating "Water quality studies in Lake Nasser and the River Nile". The project which is coordinated by the Egyptian Academy of Science and Technology, in Cairo, is studying the environmental impact which the building of the Aswan Dam has had on water quality, public health and agriculture.

France

EUTROPHICATION OF LAKES

"Eutrophication of lakes: a bibliographical collection", Paris 1975, published by the Association Francaise pour l'Etude des Eaux is a literature survey in French. It reviews the different aspects of eutrophication, sources, effects and factors involved, as well as the effectiveness of remedial measures.

Luxembourg

MERCURY AND CADMIUM CONTAMINATION

"Problems of the contamination of man and his environment by mercury and cadmium" is the subject of a European symposium of which the proceedings have been published by the Commission of the European Communities, Luxembourg, 1974. The papers, presented in 4 languages, are provided with English summaries. Results of a questionnaire on these pollutants in the environment in Europe are reported, including analytical techniques, ecological effects, diet studies and effects on human beings.

Netherlands

WIND AND SUN COMPENDIUM

At an international conference on "Appropriate technologies for semi-arid areas; wind and solar energy for water supply", held in West Berlin in September 1975 (see Newsletter No. 58), the need for a newsletter was discussed, to permit international exchange of information on activities related to wind and solar energy and to promote contacts between researchers and development workers for improved collaboration and results. The TOOL Foundation, P.O. Box 525, Eindhoven, the Netherlands, has recently taken up the recommendation by publishing a "Wind and sun compendium." Researchers and organizations active in the field of wind and solar energy as it applies to water supply are requested to send a resume of their activities and contribute to this international information exchange activity.

Venezuela

RURAL WATER SUPPLY PROGRAMME

At the Pan American Conference on Drinking Water Quality Improvement, held in Sao Paulo in October 1975, an interesting review on the drinking water quality in the rural areas of Venezuela was presented by Mr. Jose M. Carrillo. By 1975 Venezuela had constructed 904 aqueducts serving 2705 communities to bring water to 1.7 million people; 82% of these systems are chlorinated. After initial successes (a 50% coverage in 1969) the percentage of rural population served dropped to 47.5%. The main problems facing the National Programme for Rural Aqueducts are: increasing demand for services by the growing communities, smaller budgets and lack of personnel. An organization at national level with branch offices will carry out a more effective control on the quality of the water; procedures used will be evaluated, and training courses for professional and sub-professional personnel required by the programme intensified. Information: Direccion de Malaria y Saneamiento Ambiental, Ministerio de Sanidad y Asistencia Social, Caracas.

New Publications

Inventory of water resources research in Australia, 1973. Department of Environment, Australian Water Resources Council, Australian Government Publishing Service, Canberra 1975. 431 pp.

Publications List, Brace Research Institute of McGill University, Quebec, Canada

P. Fraenkel. Food from Windmills, Intermediate Technology Development Group Ltd., Parnell House, 25 Wilton Road, London SE14 1JS, U. K.

Guide to the integration of health education in environmental health programmes, by K. A. Fisharoti, Geneva, World Health Organization, 1975 (WHO Offset Publication No. 20) 81 pages. Price: Sw.fr. 15.-. French edition in preparation. Available through WHO sales agents.

Housing, the house environment, and health. An annotated bibliography, by A. E. Martin, in cooperation with F. Kaloyanova and S. Mariarka, Geneva, World Health Organization, 1976 (WHO Offset publication No. 27) 120 pages. Price Sw.fr. 18.-. French edition in preparation. Available through WHO sales agents.

Meetings

WHO/PAHO Symposium on Wastewater Treatment and Disposal, Buenos Aires, Argentina, 15-18 June. Information: Pan American Centre for Sanitary Engineering and Environmental Sciences (CEPIS) Casilla Postal 4337, Lima 100 Peru.

XV Interamerican Sanitary Engineering Congress, Buenos Aires, Argentina, 20-25 June. Information: Asociación Interamericana de Ingeniería Sanitaria (AIDIS), Sección Argentina, Cerrito 1250, Buenos Aires, Argentina.

IXth International Conference on Health Education, Ottawa, Canada, 29 August-3 September. Information: Canada's Organizing Committee, IXth International Conference on Health Education, c/o Canadian Health Education Specialists Society, P.O. Box 2305, Station "D", Ottawa, Ontario, Canada K1P 5K0.



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postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070-694251, teleg.: worldwater the hague, telex 33604

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Canada

WATER MANAGEMENT IN LATIN AMERICA

Water Quality Bulletin is a publication of the WHO Collaborating Centre on Surface and Ground Water Quality (Canada Centre for Inland Waters, Burlington, Ontario). The second issue of the bulletin is devoted to water problems and water management in Latin America in general and in countries such as Argentina, Brazil, Mexico and Peru in particular.

Federal Republic of Germany

TESTING METHODS FOR E.COLI AND COLIFORM ORGANISMS

For testing E.coli and coliform organisms according to the drinking water act of January 31, 1975, the committee on "Microbiology of drinking water" of the Germany Association of Gas and Water Engineers elaborate on the several methods that can be used. (GWV Wasser/Abwasser 117 (1976) 4, p. 170 - 176).

USE OF PLASTIC FILMS IN STORAGE RESERVOIRS

G.Klingebiel reports the favourable mechanical and physical properties of plastic as a lining and construction material used in 10 drinking water reservoirs of the Siegerland water undertaking. Chemical and bacteriological control of the water and careful supervision during construction are required. P. Groth found in comparative experiments with several qualities of plastic films that when polyvinyl chloride film which contains a plasticizer was used, a slimy layer of micro-organisms appears on the surface; plasticizer-free films did not show this growth.

The above results are report in Wasser und Boden 27 (1975) no. 10, p. 253 - 356 and p. 257 - 259.

India

NATURAL COAGULANT AIDS

Work on natural coagulant aids has been completed at the National Environmental Engineering Research Institute, Nagpur. Natural products include nirmali seeds (which have been used for centuries to clarify muddy waters), tamarind, guar, red sorella, femigreek and lentils. Conclusions drawn from the studies are: a) the working solution should be prepared fresh each time; b) the effective dose is 2 to 20 mg/l in the pH range of 4 to 9; c) the aids are more effective at high turbidity levels; savings of 40-54 percent of filter alum have been achieved; d) the natural coagulant aids are uneconomical below 300 turbidity units.

U. S. A.

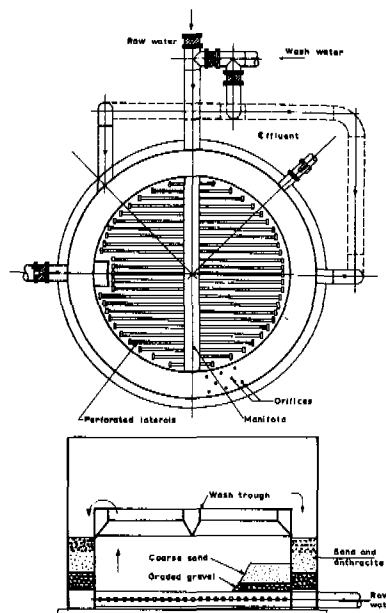
ALGAE CONTROL

"Study on algae control in water supply reservoirs" by C. B. Muchmore, published by the Illinois Institute for Environmental Quality, Chicago, 1973, compares various methods for controlling algae in water supply reservoirs with the method utilizing copper sulphate. These methods include: nutrient control, biological control, water intake locations, destratification, light exclusion, sound and alternative algicides. A continued use of copper sulphate may lead to values in excess of the current Illinois water quality standard for copper of 0.02 mg/l, but it was not possible to recommend a generally applicable method that is more desirable from an environmental point of view.

Venezuela

UPFLOW CONTACT FILTER

A compact upflow and surrounding downflow filter was described by Ing. German Sanchez in his presentation "Sedimentadores de solidos de contactos de flujo ascendente" at the XIIIth Interamerican Congress for sanitary engineering in Asuncion, Paraguay in August 1972. In the central upflow filter which is filled with coarse sand, mixing flocculation and sedimentation take place. The settled water has a turbidity of 30 JTU (Jackson Turbidity Units) and flows in the downflow anthracite - sand filter. A compact plant has been achieved, in which cost savings have been obtained. The International Reference Centre for Community Water Supply is undertaking a study of and collecting data on small supplies and treatment plants. Information on systems which could be suitable for rural areas and small towns is therefore welcome at the IRC, P.O.Box 140, Leidschendam, the Netherlands.



News from WHO

HEALTH ASPECTS OF HUMAN SETTLEMENTS

It has become the custom at the World Health Assembly, which met this year from 3 to 21 May, to devote time to technical discussions in which delegates participate as individuals, not as representatives of their countries. In this way, advantage is taken of a unique annual gathering of public health, sanitary engineering and other experts from all over the world. This year's discussions were on "Health aspects of human settlements". A publication based on all the related documentation will be issued by WHO in due course.

The May 1976 issue of *World Health*, the magazine of the World Health Organization, was timed to coincide with both the technical discussions and with "Habitat", the United Nations Conference on Human Settlements taking place in Vancouver from May 31 to June 11. In an introduction, Dr. Halfdan Mahler, Director-General of WHO, proposes two vital targets to improve the quality of life in human settlements: the first is to assure the access of all people to decent health care by the end of the century and the second is to provide access to safe drinking water and hygienic disposal of wastes for all people within the same space of time.

Meetings

International Symposium on Wind Energy Systems, Cambridge, St. John's College, 7-9 September 1976.

Information: Organizing Secretary, Wind Energy Systems, BHRA Fluid Engineering, Cranfield, Bedford, England.

International Conference of the International Association on Water Pollution Research. Sydney, 17-22 October 1976.

Information: Australian National Committee IAWPR, Box 2609 GPO, Sydney NSW 2001, Australia.

New Publications

Todd, K. Macnulty, D.E.: Polluted ground water: a review of the significant literature. Santa Barbara, California, TEMPO, 1974.

Proceedings of the Symposium in Maintenance of Water Quality, Cambridge, September 1975. The Institute of Water Engineers and Scientists, 6-8 Sackville Street, London W1X 1DD.

Ozone Chemistry and Technology. This bibliography covering literature in the period 1961-1974 is published by the Franklin Institute, Philadelphia, Pennsylvania, U.S.A.



who international reference centre for community water supply

postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
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newsletter

I.W.S.A. - Edition

Newsletter no. 68 - August 1976

News from IRC

INTERNATIONAL SEMINAR ON COMMUNITY WATER SUPPLY FOR DEVELOPING COUNTRIES

The International Reference Centre for Community Water Supply (IRC) is organizing an International Seminar on Community Water Supply for Developing Countries, to be held from 6 - 10 September 1976 in Amsterdam, the Netherlands.

The conference is planned for attendance by chief public health engineers and directors of community water supply agencies. The objective is to introduce methods and techniques that have been tested and found effective in some countries, but may not be known or understood elsewhere. Such transfer of information could be instrumental to an accelerated provision of drinking water in needy areas, especially in developing countries. The timing of the seminar will allow participants also to benefit from the World Congress of the International Water Supply Association (IWSA) to be held in Amsterdam from 13 - 17 September, 1976. An invitation has been secured from IWSA allowing the Seminar participants extending their stay in Amsterdam to take part in the Congress. For reasons of organization and effectiveness, attendance to the Seminar will have to be restricted to 35 - 40 members and will be by invitation only.

INTERNATIONAL RESEARCH AND DEMONSTRATION PROJECT ON SLOW SAND FILTRATION

The main objective of IRC's research and demonstration project on slow sand filtration is to promote the wider application of slow sand filtration for biological treatment of drinking water in developing countries. It is a simple and reliable process and very appropriate for application in rural villages and urban fringe areas. The more so, as use can be made of local skills and indigenous materials in the construction, operation and maintenance of the filter.

In the first phase of the project field investigations, literature studies and applied research on pilot filters are carried out in several developing countries. In the second phase full scale village demonstration plants are being set up and will be used for further investigations and for the demonstration of the suitability of the process at village level. The results of the study will be compiled in a series of guidelines. Seminars and demonstration courses will be organized for the transfer and exchange of knowledge. Finally, the development of large-scale implementation programmes will be promoted on a national level.

To give the demonstration activities a sound basis, the collection of existing information and experiences is an important element of the first phase of the project. As the slow sand filtration project focuses on practical solutions rather than theoretical problems, material not officially published, such as internal reports, case studies, notes from field trips, drawings, etc., will also be of great value. For that reason we would like to request that such information as is available be sent to the IRC. It will be compiled in a selected annotated bibliography and widely distributed.

Information: WHO/IRC, P.O. Box 140, Leidschendam, the Netherlands.

United Nations

UN WATER CONFERENCE

A United Nations Water Conference will be held from 7 to 18 March 1977 in Argentina. It is seen as the focal point in a concentrated programme of reappraisal of the water situation at national and regional levels with the objective to identifying the constraints that need to be overcome in an orderly programme of development and management of water resources and the taking of appropriate action. The Conference will not essentially be a technical one; although there will be background papers on projections of demand and supply and an assessment of the likely impact of technology on the availability and use of water. The emphasis will rather be on economic, social, environmental and institutional aspects, which are believed to be more significant in their influences on water management, at least in the short and medium term. The Conference Secretariat has been established at the UN Headquarters, 866 United Nations Plaza, New York, N.Y. 10017, U.S.A.

HABITAT

A substantial feature of HABITAT: United Nations Conference on Human Settlements, held in Vancouver from 31 May to 11 June 1976, was the adoption of recommendations for national action. Water supply and waste disposal were prominently included in the section of these recommendations dealing with "Shelter, Infrastructure and Services". The complete HABITAT text is quoted below:

(a) In the less developed countries, nearly two third of the population do not have reasonable access to safe and ample water supply, and even a greater proportion lack the means for hygienic waste disposal.

(b) Safe water supply and hygienic waste disposal should receive priority with a view to achieving measurable qualitative and quantitative targets serving all the population by a certain date; targets should be established by all nations and should be considered by the forthcoming United Nations conference on water.

(c) In most countries urgent action is necessary to:

(i) Adopt programmes with realistic standards for quality and quantity to provide water for urban and rural areas by 1990, if possible;

(ii) Adopt and accelerate programmes for the sanitary disposal of excreta and waste water in urban and rural areas;

(iii) Mobilize popular participation, where appropriate, to co-operate with the public authorities in the construction, operation and maintenance of infrastructure;

(iv) Plan water supply and the sanitary disposal of waste together in the framework of national resource planning;

(v) Reduce inequalities in service and access to water as well as over-consumption and waste of water supply;

(vi) Harmonize and co-ordinate the interests and efforts of local governments and other public bodies concerned through the appropriate planning by the central Government;

(vii) Promote the efficient use and re-use of water by recycling, desalination or other means taking into account the environmental impact;

(viii) Take measures to protect water supply sources from pollution.

U.S.A.

FLUORIDATED DRINKING WATER AND CANCER

An examination by scientists of the National Cancer Institute (NCI), Bethesda, Maryland, of trends in cancer death rates in the United States during 1950-1969 has failed to produce evidence linking natural or artificial fluoridation of public water supplies to cancer. The scientists also found no evidence of cancer risk attributable to fluoridation from a comparison of the numbers of cancer cases diagnosed in 1947-48 and 1969-71 in two major metropolitan areas, one fluoridated and the other nonfluoridated. The study indicated that well-known risk factors in cancer, such as urbanization, industrialization and socio-economic characteristics of the population, appeared to explain reported variations among fluoridated and nonfluoridated areas.

News from IWSA

STANDING COMMITTEES INTERNATIONAL WATER SUPPLY ASSOCIATION

The eleventh International Water Supply Congress will be held from 13 to 17 September 1976 in Amsterdam. Sessions of two Committees of the International Water Supply Association pay particular attention to problems in developing countries:

- Committee on Water Supplies in Developing Countries and
- Committee on Education and Training of Waterworks Personnel.

The session of the first Committee will be held on the afternoon of September 14th. The subjects include: "Review of the work of leading international organizations in water supplies in developing countries" by Dr. B.H. Dieterich of WHO, "Water Supply Problems in Rapidly Expanding Cities" by Irwin Nazir (Indonesia) and B.A. Oludude (Nigeria). Chairman: C. van der Veen. The session of the Education and Training Committee will be held on the afternoon of September 16th. The programme includes the following items: "Guidelines for the development of water supply training programme" (by the Working Group on Education and Training); "Training of water treatment plant operators" by A.B. Redekopp (Canada) and "Training for distribution work in a water authority" by C. Dyard (France). Chairman: S.G. Barrett.

News from WHO

TWENTY-NINTH WORLD HEALTH ASSEMBLY

The 29th World Health Assembly, attended by delegates of 142 of the 151 Member States of the World Health Organization, terminated its work on 21st May 1976 after a three-week session. The United Nations and many other international organizations were represented. Of particular interest in relation to basic sanitary measures, WHO's human health and environment programme was discussed. The Assembly also discussed the progress achieved by developing countries in the provision of community water supplies and excreta disposal during the five years '71-'75. Data on the progress will be published in one of the forthcoming issues of the World Health Statistics Report and will then be available to interested readers through WHO sales agents. The Assembly stressed that potable community water supply and sanitary disposal of human and animal excreta are basic services for the control of major communicable diseases and contribute to socio-economic development and improvement of the quality of life. The Assembly recommended that Member States give greater priority to the least privileged sections of the population living in rural and congested urban and fringe areas; and intensify education of the public in health implications of community water supply and excreta disposal.

Conferences

INTERNATIONAL ASSOCIATION ON WATER POLLUTION RESEARCH

The 8th International Conference of the International Association on Water Pollution Research will meet in Sydney, Australia from 17 to 22 October 1976. In the scientific and technical programme reports on research and its application in water pollution control will be presented and workshops held.

Information: Australian National Committee IAWPR, Box 2609, G.P.O. Sydney, NSW 2001, Australia.



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nw havenstraat 6, voorburg-2112 (the hague), the netherlands
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Federal Republic of Germany

NEW TECHNOLOGIES IN WATER SUPPLY

The German Association of Gas and Water Engineers, Esborn, lists in its technical paper series on water, no. 100, 1976, current projects of investigations in the Federal Republic of Germany. The publication (in German) states the problem, current state of the art, scope of study and lists addresses of research institutes.

Information: Deutsche Verein für Gas und Wasserfachmänner, Frankfurter Allee 27, 6236 Esborn 1 Federal Republic of Germany.

ADSORPTION

The publication on Adsorption, no. 9, 1975 by the Chair for Water Chemistry, University of Karlsruhe, deals with the use of activated carbon and its various aspects such as preparation, efficiency, regeneration, optimal stage in water treatment, microbial growth. The publication is in German and has an extensive bibliography.

India

RURAL WATER SUPPLY IN TAMIL NADU

In the Journal of the Indian Water Works Association, no. 1, 1976, p. 81-85, K.G. Menon et al describe the rural water supply situation in Tamil Nadu, where most of the water is abstracted from deep wells. Excessive iron, fluoride, nitrates and dissolved solid contents with respect to the Indian Drinking Water Standards were found in many cases and there is a need for alternative techniques for the reduction of the contaminants.

Iran

VILLAGE WATER

In the period between 1971-73 a study was carried out in villages in the CENTO (Central Treaty Organization) region in Iran, Pakistan and Turkey on the relation between water quality, consumption and health. Results were reported in Village Water, a CENTO scientific programme paper no. 10, Tehran, 1974. The second stage of this project will assess the changes taking place after the introduction of a piped water supply.

United Kingdom

RESEARCH REGISTER IN THE U.K.

The Water Research Centre (45 Station Road, Henley-on-Thames, Oxon RG9 1BW, England) has prepared a Register of Research in the Water Industry, which includes information on some 450 research projects in the public sector in the U.K. water industry. In addition to the Centre's 190 projects, it presents a comprehensive summary of water research by and for the water authorities in the United Kingdom. The projects have been grouped in the following ten technical sections: Resources, Fish studies, Water Treatment, Institutions and Sewerage, Quality surveillance and health, Waste water treatment, Sludge treatment and disposal, Coasts and estuaries, Instrumentation and chemical analysis, Operational research, economics and computing.

EXAMINATION OF PAHS

Polycyclic aromatic hydrocarbons (PAHs) are a group of organic chemicals, present in nature, a minority of which are carcinogenic. PAHs are widespread in the environment, arising from combustion of fossil fuels and from synthesis by micro-organisms. Surface waters receive PAHs from rainwater, air, sewage effluents, river sediments and surface run-off.

The World Health Organization (International Standards for Drinking Water, 3rd ed., p. 34) has set a limit for drinking water of 200 ng/litre (2×10^{-7} g/l) of PAH as determined by the recommended method. The method is being used by the Water Research Centre (WRC) to examine various types of water.

The method estimates the individual and total amounts of six of the more strongly fluorescent PAHs known to occur in aqueous environments. The six PAHs are fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, ideno(1,2,3,-cd)pyrene, benzo(e)acephenanthrylene and benzo(a)pyrene. Concentrated extracts of the sample with purified cyclohexane are spotted at the corner of a thin-layer chromatography (tlc) plate. Elutions in perpendicular directions separate relatively non-polar from polar hydrocarbons and the hydrocarbons from one another. The plates are examined under ultra-violet light. The fluorescent intensities of the separated PAH spots are compared with a series of standard chromatograms containing known amounts of PAH. Results have shown that conventional water treatment processes are capable of removing PAH from contaminated river water, containing 100 to 1000 ng/litre PAH, leaving only trivial amounts in the treated water.

A warning is issued concerning the dangers of handling pure carcinogens in the preparation of standard chromatograms.

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

U.S.A.

FIRST INTERNATIONAL SYMPOSIUM ON OZONE

Papers and discussions at the first International Symposium on Ozone for Water and Waste Water Treatment, held in Washington D.C. in December 1973, are compiled in a publication by the International Ozone Institute, the Environmental Protection Research Institute and the U.S. Environmental Protection Agency, 1973.

A Forum on Disinfection with Ozone was held by the International Ozone Institute in Chicago from June 2-4, 1976 and a World Congress on Ozone Technology is planned for early 1977 in Europe.

CATALOGUE OF TERATOGENIC AGENTS

The above catalogue by T.P. Shepard, published by the John Hopkins University Press, 1973, lists more than 600 chemicals which can cause malformations at birth in animals. This was found out in an experiment that includes some 20 substances which are at present known to have the same effect on human beings. Literature references are provided.

FORMATION OF HALOGENATED ORGANICS

In a publication entitled 'Formation of halogenated organics by chlorination of water supplies' (a review), Washington, 1975 by the U.S. Environmental Protection Agency, J.C. Morris and G. McKay review the literature on the formation of organo-halo compounds during chlorination of water. Possible reactions of dilute chlorine solutions with organic compounds likely to present, are discussed.

New Publications

Amavio R., Hunter W.J., Smeets J.G.P.M.: 'Hardness of drinking water and public health'. Proceedings of the European Scientific Colloquium, Luxemburg, May 1975, Commission for the European Communities, Oxford, Pergamon 1976.

'Symposium on Maintenance of Water Quality', Cambridge University, 9-11 September 1975, Institution of Water Engineers and Scientists, London 1975, 149 p.

'Proceedings of the Symposium on the Design and Operation of Siphons and Siphon Spillways', London, May 1975, Publication Sales BHRA Fluid Engineering, Cranfield, Bedford MK43 0KJ, England.

Meetings

Symposium on Future Developments in Water and Sewage Treatment, London, December 1-2, 1976. Information: Secretary, Institution of Water Engineers and Scientists, 6-8 Sackville Street, London W1X 1DD, England.

Conference and Exhibition on the use of solar energy, Essen, Gruga-Halle, February 4, 1977. Information: Arbeitsgemeinschaft Solarenergie e.V. (ASE), Kruppstrasse 5, 4300 Essen 1, Federal Republic of Germany.

Conference of the German Association of Gas- and Water Engineers (D.V.G.W.) and the German Federation of the Gas and Water Industry (B.G.W.) and Exhibition Berlin, 10-15 May, 1977; International Symposium on Ozone and Water, Berlin 16-17 May, 1977. Information: A.M.K., Berlin, Ausstellungs Messe Kongress GmbH, Messedamm 22, D 1000 Berlin 19, Federal Republic of Germany.

Rural Development Technology - an integrated approach, Bangkok 21-24 June 1977. Information: Dr. Gajendra Singh, Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand.



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Europe

EUROPEAN WATER TREATMENT FEDERATION

Officially constituted in February 1975, the European Water Treatment Federation, better known as "Aqua Europa" aims at bringing together national associations, water industries and professionals; the promotion of the water treatment branch and guarding the interest of the profession in general, is their main objective.

Information: Aqua Europa, B. P. 303, CH-1211 Geneva 12, Switzerland

France

WATER RESOURCES EDUCATION

The proceedings of the International Seminar on Water Resources Education, which was held in Paris and Strasbourg on March 24 - 29, 1976 have recently been published. Topics discussed are: the place of education in water resources and its relationship to environmental problems; trends in water research, technology management and their implications for education programmes, teaching methods: philosophy, concepts and approaches, tools and aid, continuous education and interdisciplinary training, priorities for developing countries; educational policies, international action for promoting education in water resources.

Information: International Water Resources Association, IWRA Business Office, 311 Illinois Building, 133 North Neil Street, Campaign, Illinois 61820, U. S. A.

Western Pacific

WATER MANAGEMENT IN THE WESTERN PACIFIC

Water quality problems of some countries of the WHO Western Pacific Region such as the Philippines, Japan, Australia and New Zealand are dealt with in the July 1976 issue of the Water Quality Bulletin, published by the WHO Collaborating Centre on Surface Ground Water Quality, Canada Centre for Inland Waters, Burlington, Ontario, Canada.

United Kingdom

EXPERIMENTAL PURIFICATION LAKES

Clayfield, G. W. and Holloway, D. M. report in Water Pollution Control, 1976, 75, No. 3, p. 341-352, the results of experiments on the feasibility of using artificial lakes for treatment of polluted Thames river water. During periods of storm flow, suspended matter is removed, also tertiary treatment will be provided to sewage effluents entering the river. Based on the satisfactory results obtained, a series of lakes are being planned now at Kingsbury. An additional benefit would be that the lakes would serve recreational purposes.

BIOLOGICAL SURVEILLANCE OF RIVERS

The above biological monitoring handbook by Dr. J.M. Hellawell (1976) can be obtained from the Water Research Centre, Medmenham Laboratory, Henley Road, Medmenham, P. O. Box 16, Marlow Bucks. SL7 2HD, England.

The book is primarily intended to provide guidance for the non-specialist-biologist on the major facets of surveillance in rivers and to provide a summary of the literature. The increasing management of rivers by impoundment, regulation and bulk transfer between catchment, together with requirements for the control of water quality, imposes correspondingly increased responsibilities on fresh water biologists, few of whom are sufficiently trained or experienced to cover all the relevant aspects of river ecology adequately. It is hoped that the book will fulfill the need for a single source from which to begin work on the wide range of problems confronting the biologist engaged in water quality monitoring and assist in the planning and interpretation of investigations into the environmental impact of large scale water management schemes.

Tanzania

RURAL WATER SUPPLY DESIGN PARAMETERS

Basic parameters necessary for designing water supplies for rural areas are often lacking in developing countries. This may lead to the inefficient use of scarce funds. In his study "A new method of determining rural water supply design parameters in conditions of a developing countries in the equatorial zone, Tanzania", Dr. D. J. Stanislawski proposed to divide the country into "uniform water need zones". It was assumed that water consumption was dependent on climatic conditions, population and cattle density and development potential. Field studies in one of the zones gave a picture of average and maximum water consumption and consumption irregularly over the day and year. The author suggested that similar studies for other zones should be planned. Analysis of water supplies implemented indicates that especially in arid zones, water supply can accelerate and concentrate economic development. The above publication can be obtained on an exchange basis from: Akademia Rolnicza w Krakowie Instytut Rolnictwa i Leśnictwa, Krajów Tropikalnych i Subtropikalnych w Prusach, 32-010 Kocmyrzów, Poland.

U. S. A.

COMPARATIVE DISINFECTION METHODS

R. C. Hoehn discussed in the Journal of the American Water Works Association, June 1976, p. 302-308, alternatives or supplements to chlorination including the use of halogen and halogen compounds, ozone and ultraviolet irradiation. Relative merits and disadvantages of each were compared. Information has also been collected about the relative effectiveness of various disinfectants to relate this to some practical points in the treatment of water and to predict some treatment trends.

IRON REMOVAL BY OZONATION

Iron is frequently removed from ground water by the traditional sequence of aeration and filtration. The presence of organic compounds, however, can interfere in this process by peptizing ferric hydroxide flocs. J. Timothy Cromley and John T. O'Connor report in the Journal of the American Water Works Association, June 1976, p. 315-319, on promising results in the use of ozonation in place of simple aeration.

RESERVOIR LININGS

Previously, predominantly rigid materials were used as liners in potable water storage reservoirs. In a next stage asphalt concrete with a seal coat was introduced. The development of prefabricated asphalt panels and plastic sheets made it possible to extend the use of linings to all types of configurations of storage reservoirs. F. E. Harem et al describes in the Journal of the American Water Works Association, May 1976, p. 238-242 some of these applications, performance of the different materials and related problems.

Meetings

National Conference on Water; St. Louis, Missouri, U.S.A., May 23-25, 1977.

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

Water and Water Engineering in Hot Countries; a three-month course; Loughborough University of Technology, England, April-July 1977

Information: Mr. J. Pickford, University of Technology, Loughborough, Leics. LE11 3TU, England.

Southern African Conference on Water for Life; Lestotho, South Africa, June 6-9 1977.

Information: Conference Secretariat S133, CSIR, P. O. Box 395, Pretoria, South Africa 0001.

7th International Exhibition for Environmental Sanitation Water - Waste Water - Refuse - Air - Noise: Pro Aqua Pro Vita '77; Basel, Switzerland, June 14-18 1977.

Information: Secretariat Pro Aqua Pro Vita '77, P. O. Box CH-4021 Basel, Switzerland.

2nd International Conference on Transfer of Water Resources Information; Colorado, U. S. A., June 30 - July 2 1977.

Information: Mr. N. S. Crigg, Colorado State University, Fort Collins, Colorado 80523, U.S.A.

4th Conference on Environmental Health Engineering in Hot Countries; Loughborough University, England, September 25-27 1977.

Information: Mr. J. Pickford, University of Technology, Loughborough, Leics. LE11 3TU, England.



who international reference centre for community water supply

postal address: p.o. box 140, leidschendam, the netherlands
nw havenstraat 6, voorburg-2112 (the hague), the netherlands
telephone: 070-694251, teleg.: worldwater the hague, telex 33604

newsletter

No. 71 - November 1976

EEC

WATER TREATMENT IN THE EEC

In 1975 a survey was made in the European Economic Community on the state of the art of drinking water treatment. M. Hyde reports in *Chemistry in Britain*, 1976 12 No. 9 p. 293-295 on the results obtained, and data on storage, coagulation, sedimentation, filtration, flotation, ammonia and nitrate removal, carbon adsorption, disinfection, sludge treatment and aeration.

England

MONITORING OF DELETERIOUS SUBSTANCES

The Water Research Centre, Medmenham, at the request of WHO, has assumed responsibility for coordination and management of a project for monitoring the concentrations of lead and cadmium in the public water supplies of twelve cities in Australia, Brazil, Czechoslovakia, Egypt, India, Japan, Netherlands, Norway, South Africa, Thailand, United Kingdom and the United States. Phase one, the formulation of a methodology was followed by phase two in which the methodology was tested. Under phase two the detailed sampling strategy was established and simultaneously the precision and accuracy of the analytical procedures was determined. The information gathered in phase two was reviewed by representatives from nine of the participating laboratories at a meeting convened by the Water Research Centre in August 1976.

The meeting also developed the detailed plans for the next phase of the project which was planned to begin in October 1976 and which will constitute a one year period of monitoring the water supply systems for lead and cadmium. The results of the project will form a basis for the design of water quality monitoring programmes covering more participating cities and more determinands. The objective is to develop an overall methodology which will permit the international comparability of analytical results for toxic materials so that valid conclusions may be determined on their adverse effects on health.

ESCAP

WIND POWERED WATER PUMPING

In March 1976 the Economic and Social Commission for Asia and the Pacific (ESCAP) held an Expert Working Group meeting on the use of solar and wind energy. As an outcome of the meeting, ESCAP will conduct during the period March to November 1977 a roving seminar on Rural Energy Development (rural electrification, solar and wind energy and biogas) in countries of the ESCAP region. Dissemination of small scale systems applicable in rural development will hopefully lead to improvements to traditional practices. Background documents for the seminar on Wind Energy will be the proceedings of above mentioned meeting and a planned paper on "The practical application of wind powered water pumping"; they would serve as guidance to the designs and construction of water pumping windmill. Engineers active in wind energy development are kindly invited to assist above seminars and submit information on successful application and promising prototypes and their work with water pumping windmills. Mr. Marcus M. Sherman, Consultant ESCAP, United Nations Building, Sala Santitha, Bangkok 2, Thailand.

India

CHARCOAL POWDER IN FILTER AID

In an attempt to find out a suitable indigenous substitute for diatomaceous earth for pressure filtration the National Environmental Engineering Research Institute (NEERI), Nagpur developed a filter aid FA-5. FA-5 is a wood charcoal powder. Particle size of FA-5 is in the 50-100 microns range. Performance of FA-5 was compared with a few diatomaceous earth samples. FA-5 gave longer filter runs than diatomaceous earth samples in studies at controlled flow rate. There was about 60 percent reduction in turbidity with Celite-545 at uncontrolled flow rate. FA-5 brought down the turbidity to below 5 units irrespective of raw water turbidity.

I.R.C.

TRAINING SEMINAR

An international training seminar on Community Water Supply in Developing Countries was conducted by the IRC in Amsterdam from 6 - 10 September 1976. Attended by chief public health engineers and managers of water supply programmes and agencies from 26 developing countries, the seminar was supported by WHO, World Bank and UNICEF and many agencies and international organizations. The participants were introduced to approaches, methods and techniques which are important in obtaining an increased coverage of community water supply in the developing countries. Recommendations on programmes of action in which the international society can assist have been brought forward during the discussions and concern training, motivation programmes, organizational set-up, information exchange and appropriate technology. A follow-up seminar was suggested to be held in Mexico in 1979 and a similar seminar for developing countries will be held on the occasion of the International Water Supply Congress in Kyoto in 1978.

The seminar was held in the week prior to the congress of the International Water Supply Association, so that an opportunity was given to have a greater representation from developing countries at the congress. A resolution was adopted by the seminar for submission through the International Water Supply Association to the secretariat of the United Nations Water Conference, which will be held in Argentina in March 1977, whereby governments of developing countries and aid-giving agencies were urged to give a high priority to community water supply and provide all the people with safe and accessible drinking water by 1990.

U.S.A.

WATER QUALITY INDEX

In "A comparison of several water quality indexes", a publication in the Journal of the Water Pollution Control Federation (1976, 5), no. 48, p. 954-958, J. M. Lanwehr and R. A. Deininger compare five water quality indexes that have recently been developed. The correlation and deviation parameters used are coliform count, biochemical oxygen demand, pH, NO₃, PO₄, temperature deviation from equilibrium, turbidity, total solids and percent saturation of dissolved oxygen.

LEAD POLLUTION

Lead Pollution, a bibliography with abstracts edited by K. G. Werner and R. J. Brown is published by the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 21161, U. S. A. The 247 abstracts deal with emission and effluent control technology detection and analysis, are and water quality data, radio isotope studies and general studies on lead pollution. Toxicity and the effects of lead in plants, animals and human health are not included.

New Publication

New WHO Publication: Guide to sanitation in tourist establishments, by Joseph A. Salvato, Jr., Geneva, World Health Organization, 1976. 141 pages, Price Sw. fr. 24,-. French and Spanish edition in preparation. Available through WHO sales agents.

This guide is intended for operators of camping sites, caravan camps, motels, youth hostels, ski resorts, chalet colonies and picnic areas. Its main purpose is to provide them with background information on health and sanitation criteria, which will help them to cooperate more effectively with public health professionals and tourist agencies in upgrading their facilities. It serves also as a comprehensive handbook on the planning, setting up and running of a tourist establishment. Health professionals themselves may find much of the material useful. After a chapter on the selection and planning of the site, the author shows how safe water supply can be developed and how sewerage can be disposed of in a sanitary manner. The provision of proper buildings and accommodations is described in some detail, with separate chapters on safe plumbing arrangements and the handling and disposal of refuse. Methods of controlling insects and rodents are fully explained and there is a large section on the important subject of food sanitation. The author then deals with specific problems such as the precautions to be taken in the operation of swimming pools, the detailed planning of caravan (travel trailer) camps and the sanitary arrangements for mass gatherings. The book ends with an account of medical and first-aid services and a chapter on such topics as fire prevention, fuel storage, picnic areas and marine sanitation. Annexes are provided on the evaluation of facilities, emergency water treatment and soil percolative testing.

Meetings

Third International Congress on Ozone Technology.

Paris, 4-6 May 1977.

Information: Secretariat of the European Committee of the International Ozone Institute, 52 Rue d'Anjou, 75008 Paris.

Seminar for Waste Handling and Disposal.

Alberta, 16-18 February 1977.

Information: Mr. G. Samuel, Pollution Control Division, Municipal Engineering Division, Department of the Environment of Alberta, Milner Building, 10040-104th Street, Edmonton, Alta T5J 0Z6, Canada.



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newsletter

No. 72 - December 1977

England

DETERIORATION OF BACTERIOLOGICAL QUALITY OF WATER DURING DISTRIBUTION

Notes on Water Research No. 6 October 1976 of the Water Research Centre, Medmenham Laboratory, P.O. Box 16 Medmenham Bucks, SL7 2HD, inform on the Centres studies on the effect of various types of water and methods of treatment on the chemical and bacteriological quality of water entering supply and throughout the distribution system, and methods of controlling bacterial numbers. Contamination with bacteria other than used for public health surveillance can occur in service reservoirs, during repair of pipelines, etc. It is suggested that a bacterial plate count following incubation at 22° for seven days is a useful method for monitoring those bacteriological aspects which are not related to public health but cause problems in water quality.

CHINESE CHAIN AND WASHER PUMPS

Chain and washer pumps are low lift pumping devices in which a chain and washers are pulled up in a continuous loop inside a closely fitting pipe over a geared chain wheel and down again to the bottom of the pipe. Water is carried up by each washer from the mouth of the submerged pipe and discharged at the top of the pipe. Chain pumps can easily be made by local craftsmen from local materials with low construction tolerances. They are slow moving and can be powered by man, animals or wind power. The compilation by the Intermediate Technology Publication Ltd., 9 King Street, London WC2 E8HN, describes 21 examples of such devices which have been developed for agricultural purposes in Chinese communes and were shown on the 1958 agricultural exhibition in Peking.

Netherlands

SYMPOSIUM ON COMMUNITY WATER SUPPLY IN DEVELOPMENT COOPERATION

Against the background of the present water supply problems in developing countries and the forthcoming U.N. Water Conference in March 1977, the Netherlands Government has requested the IRC to organize a symposium on Community Water Supply in Development Cooperation, of which the objectives are: to integrate and extend the water knowledge and experiences of experts working abroad and in the Netherlands and to discuss possible subsequent cooperative efforts; to set the framework for concrete and realistic plans-of-action to be presented at the U.N. Water Conference; to give publicity to water supply problems in developing countries. The Symposium is intended to integrate the views of a number of invited participants from different countries, working in developing countries or having extensive experience in the field of development cooperation. It will be held in the Royal Tropical Institute in Amsterdam, the Netherlands, from 7th to 10th February 1977, inclusive. The morning of the first and the last seminar day will be public plenary sessions.

WIND ENERGY BIBLIOGRAPHY

Solar energy and wind power can in certain conditions be considered as a viable energy source for rural water supply. In the framework of a cooperative effort among several Dutch institutes in the field of wind energy, a bibliography on "Wind Energy" has been compiled by the Wind Energy Group of the Eindhoven University of Technology. Abstracts have been prepared for more than half of the approximately one thousand references included in the bibliography.
Information: Library, University of Technology, P.O. Box 513, Eindhoven.

United Nations

UNITED NATIONS WATER CONFERENCE

According to the recommendation of HABITAT, the United Nations Conference on Human Settlements held in Vancouver in June 1976, countries should adopt standards of quality and quantity to achieve the goal of community water supply and sanitary disposal of excreta by 1990.

This will be considered by the United Nations Water Conference in Argentina.

At the request of the Secretary-General of the Water Conference, Mr. Yahia Abdel Mageed, World Health Organization has prepared in collaboration with the World Bank, a conference document outlining the strategies and actions that need to be taken to meet the HABITAT goals. This draft document was reviewed by a group of experts in Geneva in December 1976 and will be tabled at the meeting of the Committee on Natural Resources which meets in January 1977 as a preparatory committee for the Water Conference. Following this, the document will be put on the agenda for the Water Conference to be held in Mar del Plata, Argentina, from March 14 - 25 1977.

UNIDO

TECHNOLOGIES FROM DEVELOPING COUNTRIES

The Industrial Information Section of the U.N. Industrial Development Organisation (UNIDO) issues a series of listings called "Comparable equipment and Technologies from developing countries" which present alternatives suitable to developing countries. Information of this kind is intended to avoid duplication and promote adaption in the development of those techniques, stimulate comparative studies, widen the field of choice, encourage the exchange of information and sharing the experience among developing countries with relation to water. The January 1976 issue lists items on solar stills, solar water heaters and windmills (for pumping water).
Information: Industrial Information Section, P.O. Box 707 A-10011, Vienna, Austria.

Upper Volta

WORKSHOP IN OUAGADOUGOU

The World Health Organization in cooperation with the Government of Upper Volta and the Comité Interfricaine d'Etudes Hydrauliques convened a workshop on Rural Water Supply and Sanitation in Ouagadougou, from 6 - 10 December 1976. The workshop, attended by 30 participants from 14 Francophone African countries, was organized on behalf of the Ad Hoc Working Group on Rural Water Supply and Sanitation. The workshop concluded, among other things, that the shortage of skilled workers for water supply projects is an overwhelming constraint. A major recommendation was made that a similar workshop should be held in the near future at which the manpower needs could be thoroughly considered and a strategy for expanded training programmes could be developed.

USA

WATER METER MAINTENANCE

M.R. Williams reports on the Eleventh International Water Supply Congress, which was held in Amsterdam in September 1976 on Water Meter Maintenance practices in 110 cities in the USA. The following aspects have been studied: testing before installation, testing of three standard rates of flow, regular "meter change" programme, testing on removal of meters, repair procedure, accuracy standards including length of service. The survey indicates the importance of replacing meters on a regular basis.

METER YOUR WATER?

In Water and Sewage Works, 123 (1976) 2, p. 6869, J.B. Mitchell and K. Kukule discuss the problem "Metered Water versus flat rate system" and the various factors which play a role such as demand, fire protection, peak loads and seasonal variation.

MAGNETIC SEPARATION

C.D. Latour describes in the Journal of the American Water Works Association 1976, 68, No. 8 pp. 443-446 laboratory tests of a technique called highgradient magnetic separation (HGMS) for removes containing enough magnetite, can be removed at high speed in the magnetic separation device. Good purification is reported.

POLYELECTROLITES

During the 1972 annual conference of the International Water Works Association a seminar was held on polyelectrolytes as an aid to better water quality. The proceedings contain 7 papers and an extensive bibliography. Topics discussed are benefits, storage and handling principles, and the use of polyelectrolytes as primary coagulants, filter aids and sludge conditioners.
Information: American Water Works Association, Denver, Colorado.

NEW PUBLICATIONS

Pipeline design for water engineers. D. Stephenson, Elsevier, Amsterdam 1976, 232 pp.

Standard methods for the examination of water and waste water, 14th edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation 1976, 1232 pp.

Proceedings Water Quality Technology Conference, Dallas, December 1974, American Water Works Association, Denver, Colorado 1975.

CONFERENCES

Opportunities for Innovation in Sewerage; Reading, England, March 12 - 15 1977.
Information: Mr. C.F. Cooper, Water Research Centre, Medmenham Laboratory, Henley Road, Medmenham, P.O. Box 16. Marlow, Bucks, SL7 2HD, England.