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*Global Monitoring: Water Supply
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Safe Wastewater and Excreta Use

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*Microbial Risk Assessment and
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Water Resource Quality

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*Water and Sanitation on Ships
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Healthy Settings



World Health Organization

WORLD HEALTH ORGANIZATION - MARKETING AND DISSEMINATION

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This information products catalogue on water, sanitation and health provides bibliographic and descriptive information on over 50 recent WHO publications and CD-ROM relevant to the quality control of water, its risk assessment, water supply and sanitation, health in water resources development and management, the use of wastewater, the safe disposal of waste and the quality and control of recreational waters. It also includes books dealing with the promotion of healthy environments, and on vector control and the control of water-associated diseases.

Other information products provide current scientific information in the form of fact sheets, posters, teaching and training documents. Publications in preparation are listed in each section and relevant URL addresses are given for information available in electronic form.

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"...Safe water supply and sanitation to protect health are among the basic human rights. Ensuring their availability would contribute immeasurably to health and productivity for development..."

Dr. Gro Harlem Brundtland,
Director-General, WHO

"This new CD-ROM presents the state-of-the art information from the Water, Sanitation and Health programme at WHO. It is a practical, accessible, all-inclusive and transparent tool for those active in water, sanitation and health. A must for all specialists in the field."

Dr. Richard Helmer,
Director for the Protection of
the Human Environment, WHO

Water, Sanitation and Health Electronic Library (WSH CD-ROM), Second edition

This second edition of WHO's water sanitation and health electronic library compiles information available from the World Health Organization on the theme. It includes many of the current publications and documents in HTML format, and some other resource materials such as posters in PDF format.

The CD-ROM is key to increasing global access to information and has world-wide relevance. Information will be accessible particularly to developing countries. The CD-ROM includes different information material such as books and reports, training documents and teaching material, water-related disease fact sheets, slides collections, and much more.

The purpose of this compilation is to make information more readily accessible. It should be useful to scientists, policy makers, practitioners, students and others- whether they belong to government, operational agencies, consultancies, academia, NGOs or other institutions.

The design of the CD-ROM facilitates information recovery, and incorporates file formats and browsers which can be run virtually on any desktop or laptop computer. The information is primarily in English with a few documents also available in French.

The WHO Water, Sanitation and Health Electronic Library CD-ROM is updated yearly. Each new edition includes the latest information available as well as some texts which could not be incorporated in previous editions.

How it works

Files, except for posters, are provided in html format and they can therefore be accessed by any browser. The documents may be searched by titles or authors, themes, topics or keywords. Multi-criteria searches make them easily accessible.

Intended Audience

Policy and decision makers, Governments, Water managers, Water engineers, Water, sanitation and health institutions, Consultants, Professors, NGO's, Libraries and other interested persons.

2002, CD-ROM [E/F]
ISBN 92 4 154577 1
Swiss francs: 250.-/US \$225.00
In developing countries: Swiss francs 70.-
Order no. 0992013



The second CD-ROM provides comprehensive access to WHO's information on water supply, sanitation and health.

What's new?

The second edition includes:

Books:

- Water Quality: Guidelines, Standards and Health
- Guidelines for Drinking-water Quality. Addendum: Microbiological Agents in Drinking-Water. Second edition
- Healthy Villages. A Guide for Communities and Community Health Workers
- Arsenic and Arsenic Compounds, 2nd edition, Environmental Health Criteria 224
- Children in the New Millennium

Reports and other promotional documents covering the following topics:

- Water for Health: WHO's Guidelines for Drinking-water Quality. A brochure in English/French/Spanish
- Seven water-related disease fact sheets and four theme articles
- Managing Water in the Home: Accelerated Health Gains from Improved Water Supply
- Evaluation of the H₂S Method for Detection of Faecal Contamination of Drinking Water
- Reducing and Eliminating the Use of Persistent Organic Pesticides: Guidance on Alternative Strategies for Sustainable Pest and Vector Management
- WHO Guidelines for Drinking-water Quality; Policies and Procedures for Preparing and Updating of the WHO Guidelines for Drinking-water Quality
- Information on Sanicon
- Protocol on Water and Health

... **plus more**

CD-ROM content

The CD-ROM contains more than 11,000 pages of information, 20 books and some 100 documents and information material.

Books :

- Guidelines for drinking-water quality, 2nd edition Volumes 1 to 3, Addendum to Volume 1 and Addendum to volume 2
- Safe management of wastes from health-care activities
- Guide to the development of on-site sanitation
- Guidelines for the safe use of excreta and wastewater in agriculture and aquaculture
- Analysis of wastewater for use in agriculture
- Surface water drainage in low-income countries
- Water quality assessments
- Water pollution control
- Water quality monitoring
- Toxic cyanobacteria in water
- Monitoring bathing waters
- Water assessment report 2000

Reports and other promotional documents covering the following topics:

Arsenic in drinking-water, water resources management series, safe recreational water environments, healthcare waste, operation and maintenance, environmental health in water resources development, sanitation and hygiene education, safe wastewater use, water and health: information for the general public and thematic articles.

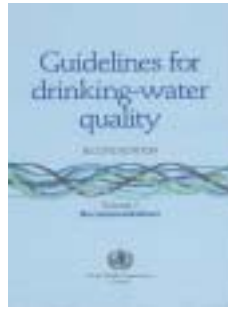
Water-related disease fact sheets on:

Anaemia, arsenicosis, ascariasis, campylobacteriosis, cholera, cyanobacterial toxins, dengue and dengue haemorrhagic fever, guinea-worm diseases, leptospirosis, hepatitis, japanese encyphalitis, lead poisoning, malaria, malnutrition, methaemoglobinemia, onchocerciasis, ringworm, scabies, schistosomiasis, trachoma, spinal injury, typhoid and paratyphoid enteric fevers and more...

Slides collection, teaching material and posters:

- Guidelines for drinking-water quality training pack
- Teacher's guide: management of wastes from health care activities
- Teacher's guide: management of wastes from health care activities: slides collection
- Teacher's guide: management of wastes from health care activities: overheads collection
- Water, sanitation and health posters
- Sanitation connection posters





Guidelines for Drinking-water Quality

Volume 1: Recommendations

Second edition

Sets out guidelines for a large number of water contaminants relevant to the quality of drinking-water.

The book also provides an explanation of how the guideline values should be applied, the criteria used in selecting the various microbiological, chemical, physical, and radiological contaminants considered, a description of the approaches used to derive the guideline values, and brief summary statements supporting the values recommended or explaining why no health-based guidelines is necessary at present.

Now in its second edition, the book has been considerably revised and expanded in the light of new scientific information, particularly concerning the health risk posed by chemical contaminants.

"... this world's single most important water quality document ... will form the basis for the development of standards in hundreds of countries around the world..."

– Water and Environment International

1993, x + 188 pages [C, E, F, R, S]

ISBN92 4 54460 0

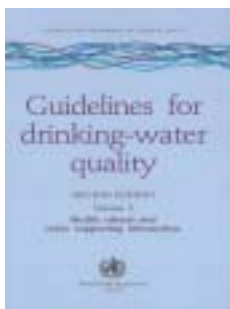
Sw.fr. 46.–/US \$41.40

In developing countries: Sw.fr. 32.20

Order no. 1151404

Third edition in preparation, 2003





Guidelines for Drinking-water Quality
Volume 2: Health Criteria and Other
Supporting Information
Second edition

Reviews and interprets the extensive toxicological, epidemiological, and clinical evidence that shaped the determination of guideline values for drinking-water quality. Organized to parallel and extend the coverage of volume 1, this second work communicates the scientific rationale for individual recommendations based on a critical review of data linking health hazards to specific exposure levels. In so doing, it aims to establish an authoritative basis for national water-quality standards that are consistent with the goal of providing wholesome, safe drinking-water in a sufficient quantity. Well over 3000 references to the literature are included.

The book has three parts. The first, on microbiological aspects, addresses the common and widespread health risks associated with the direct or indirect contamination of drinking-water with human or animal excreta, particularly faeces. The most extensive part, which contains almost 800 pages, provides evaluations, supported by toxicological monographs, for each of 36 inorganic constituents and physical parameters, 27 industrial chemicals, 36 pesticides, four disinfectants, and some 23 disinfectant by-products. The final part explains application of the reference level of dose for radiological contaminants in drinking-water.

“ an excellent volume...”

– Journal of Environmental Studies

1996, xvi + 973 pages [E, F,]
ISBN 92 4 154480 5
Sw.fr. 260.–/US \$234.00
In developing countries: Sw.fr. 182.–
Order no. 1152404



Guidelines for Drinking-water Quality
Volume 3: Surveillance and Control
of Community Water Supplies
Second edition

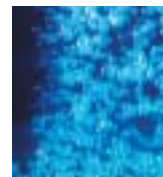
A comprehensive guide to all practical procedures and technical measures required to ensure the safety of drinking-water supplies in small communities and periurban areas of developing countries. Now in its second edition, the book has been vastly expanded in line with broadened appreciation for the many factors that influence water quality and determine its impact on health. Revisions and additions also reflect considerable new knowledge about the specific technical and social interventions that have the greatest chance of success in situations where resources are scarce and logistic problems are formidable.

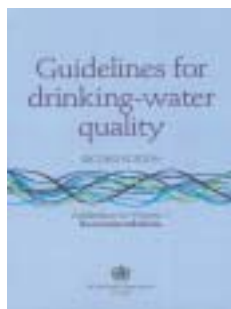
Since quality controls may be especially difficult to implement in small communities, the book concentrates on the most essential requirements, emphasizing the crucial need to ensure microbiological safety. Details range from advice on how to design simple pictorial reporting forms for sanitary inspections, to guidance on setting priorities for remedial action, from a comparison of different methods for the analysis of coliform bacteria, to drawings of measures for protecting water sources. Throughout, numerous checklists, charts, diagrams, and model forms are used to enhance the volume's practical value.

“... a practical and well written text, with beautifully presented diagrams and drawings which demonstrate the essentials of hydrogeology, sampling methods and construction of small community supplies. The invaluable annexes alone would justify having the book as an indispensable reference for anyone concerned with water supplies in developing countries...”

– Health and Hygiene

1997, xii + 238 pages [E, F,]
ISBN 92 4 154503 8
Sw.fr. 72.–/US \$64.80
In developing countries: Sw.fr. 50.40
Order no. 1153404





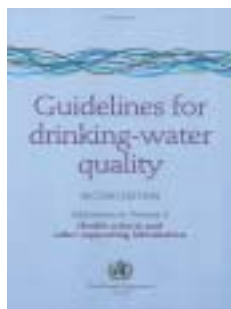
Guidelines for Drinking-water Quality

Addendum to Volume 1:
Recommendations
Second edition

This addendum to volume 1 summarizes new findings that have become available since the second edition was published in 1993, and that call for a reconsideration of selected guideline values issued at that time. In addition, guideline values for four substances are presented here for the first time. The addendum is part of WHO's ongoing effort to ensure that recommendations about the safety of chemical substances found in drinking-water are in line with the latest scientific data.

For some of the substances under review, previously established guideline values have been revised in the light of new evidence. For others, new findings confirm the continuing validity of previous recommendations. Updated or new evaluations are provided for seven inorganic substances (aluminium, boron, copper, nickel, nitrate, nitrite, and uranium), four organic substances (edetic acid, microcystin.LR, benzo[a]pyrene, and fluoranthene), ten pesticides (benzotone, carbofuran, cyanazine, 1,2-dibromoethane, 2,4-dichlorophenoxyacetic acid, 1,2-dichloropropane, diquat, glyphosate, pentachlorophenol, and terbutylazine), and a disinfectant by-product (chloroform).

1998, viii + 38 pages [E, F]
ISBN 92 4 154514 3
Sw.fr. 14.-/US \$12.60
In developing countries: Sw.fr. 9.80
Order no. 1154404



Guidelines for Drinking-water Quality

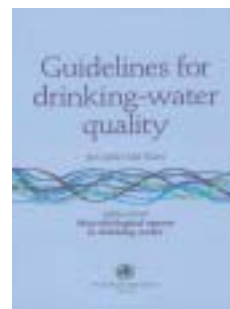
Addendum to Volume 2:
Health Criteria and other
Supporting information
Second edition

This companion volume reviews and interprets the extensive toxicological, epidemiological, and clinical evidence that formed the basis for the new or updated evaluations issued in the addendum to Volume 1. Covering the same 22 chemical substances, the volume communicates the scientific rationale for each individual recommendation. Well over 1,000 references to the recent literature are included.

"... an excellent reference book for all specialists active in water supply and water pollution control..."

– Water Lines

1998, viii + 283 pages [E]
Sw.fr. 35.-/US \$31.50
In developing countries: Sw.fr. 24.50
Order no. 1930128



Guidelines for Drinking-water Quality

Addendum: Microbiological
Agents in Drinking-water
Second edition

This Addendum to the second edition of Guidelines for drinking-water quality contains reviews of a number of pathogens that occur widely in water – *Aeromonas spp.*, *Legionella spp.*, *Vibrio cholerae*, enteric hepatitis viruses, and protozoan parasites (*Cryptosporidium*, *Giardia*, and *Cyclospora spp.*). These review documents supersede, and are more comprehensive than, those previously published in Volumes 1 and 2 of the Guidelines.

Unlike the analogous chemical reviews in the Guidelines, the microbiological review documents do not conclude with "safe" or "tolerable" exposure levels for the pathogens. The microbiological quality of drinking-water can vary rapidly and widely, and even brief exposures to pathogens may have serious health consequences. Analytical techniques for recognized pathogens may be time-consuming and complex, and are not always available, and knowledge of the identity of waterborne pathogens is in any case incomplete. The microbiological reviews therefore summarize current knowledge of transmission, attenuation, and removal of the individual pathogens, and of the effectiveness of measures for interrupting transmission.

2002, vi + 142 pages [E]
ISBN 92 4 154535 6
Sw.fr. 35.-/US \$31.50
In developing countries: Sw.fr. 24.50
Order no. 1155404



The Environmental Health Criteria Series is published by WHO and provides internationally peer reviewed risk assessments on selected chemicals. The volumes of direct relevance to drinking-water quality include the following five books.

"... not only the most extensive, but also one of the best toxicological series in existence... These books deserve nothing but praise ..."

– International Journal of Environmental Studies



Arsenic and Arsenic Compounds Second edition

This book evaluates the risks to human health and the environment posed by arsenic and arsenic compounds. Arsenic is widely distributed in the earth's crust and is emitted into the atmosphere by coal-fired power generation plants and volcanic activity. Inorganic arsenic of geological origin is found in groundwater used as drinking-water in several parts of the world, e.g., Bangladesh. In these areas, drinking-water is the main source of arsenic intake, but elsewhere food is the principal source.

The report evaluates the large number of investigations of arsenic toxicity. In the ecological section, evidence is presented that arsenic causes effects including inhibition of growth, photosynthesis and reproduction, and behavioural effects. The report concludes with a number of recommendations for future research.

Environmental Health Criteria, No. 224
2001, 187 pages
[E with summaries in F, S]
ISBN 92 4 157224 8
Sw.fr. 108.–/US \$95.40
In developing countries: Sw.fr. 75.60
Order no. 1160224
Electronic access:
http://www.who.int/pcs/ra_main.html



Vinyl chloride

This monograph deals with vinyl chloride (VC) monomer itself and is not an evaluation of polyvinyl chloride (PVC), the polymer of VC. Exposures to VC in mixtures are not addressed.

VC are investigated in water sources. VC has a relatively low solubility in water and has a low adsorption capacity to particulate matter and sediment. Volatilization of VC is the most rapid process for removal of VC introduced into surface waters. One important distribution route is leaching through the soil into groundwater where VC may persist for years. There are indications for reactions of VC with chlorine or chloride used for water disinfection, thus leading to chloroacetaldehyde and other undesirable compounds. Another possibility for interaction is with salts, many of which have the ability to form complexes with VC, perhaps resulting in increased solubility. Methods employed (with differing success) for removal of VC from contaminated waters are reviewed. The toxicity of VC is evaluated, including its carcinogenic properties.

Environmental Health Criteria, No. 215
1999, 356 pages
[E, with summaries in F, S]
ISBN 92 4 157215 9
Sw.fr. 72.–/US \$64.80
In developing countries: Sw.fr. 50.40
Order no. 1160215
Electronic access:
http://www.who.int/pcs/ra_main.html



Fluorides

This book evaluates the risk to human health and the environment posed by exposures to fluorides. It is widely known that fluoride has both positive and negative effects on human health, and there is a narrow range between intakes that are associated with these effects. Cases of skeletal fluorosis associated with the consumption of drinking water containing elevated levels of fluoride are reported.

Fluoride is ubiquitous in the environment and virtually all foodstuffs contain at least trace amounts of fluoride. The amount of fluoride present naturally in non-fluoridated drinking water is highly variable, being dependent upon the individual geological environment. Also, fluorides, especially hydrogen fluoride, are important industrial compounds and they are used in aluminium production, glass manufacturing and so on.

This document focuses on environmental exposure to fluoride derived mostly from inorganic sources and its effects on humans, animals and other biota. Data on hydrogen fluoride, calcium fluoride, sodium fluoride, sulfur hexafluoride and silicofluorides are covered, as these compounds are considered to be the most relevant of the inorganic fluorides on the basis of quantities released to the environment, environmental concentrations and toxicological effects on living organisms. A review of studies on the environmental fate and concentration of fluorides is also presented.



Inorganic Lead

Evaluates the risks to human health posed by exposure to lead and inorganic lead compounds. Reflecting the focus of research, the report concentrates on mounting evidence that exposure to low levels of lead can have significant effects on health, particularly for infants and young children. Food, beverages, and water constitute the major source of exposure for the adult general population. Infants and young children are exposed to an additional burden of lead present in soil and household dust.

Additional evidence shows increased lead absorption when diets are deficient in calcium, phosphate, selenium, or zinc.

"... a very good reference text..."

– Pathology

Environmental Health Criteria, No. 227
 2002, 268 pages
 [E, with summaries in F, S]
 ISBN 92 4 157227 2
 Sw.fr. 60.–/US \$54.00
 In developing countries: Sw.fr. 42.–
 Order no. 1160227
 Electronic access: http://www.who.int/pcs/ra_main.html

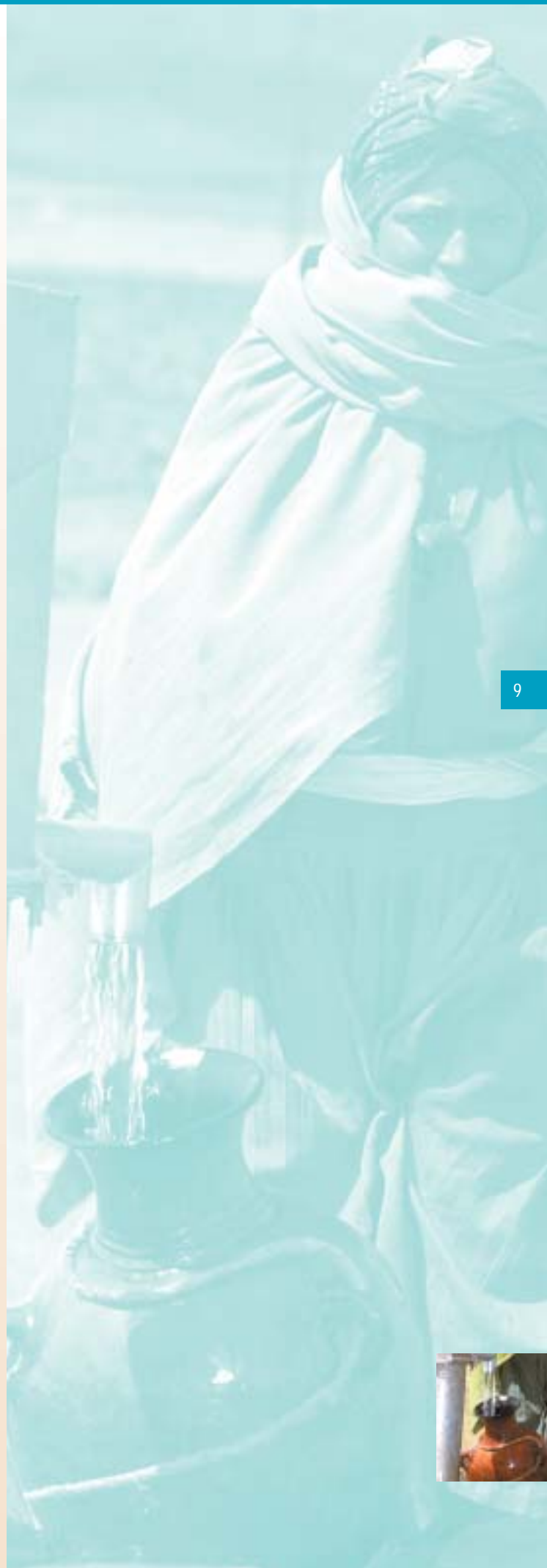
Environmental Health Criteria, No. 165
 1995, 300 pages
 [E, with summaries in F, S]
 ISBN 92 4 157165 9
 Sw.fr. 56.–/US \$50.40
 In developing countries: Sw.fr. 39.20
 Order no. 1160165
 Electronic access: http://www.who.int/pcs/ra_main.html



Disinfectants and Disinfectant By-products

This book evaluates the risks to human health posed by disinfectants and disinfectant by-products found in treated drinking-water. Noting that chlorine and other widely-used disinfectants were approved for use almost 100 years ago, when toxicological data were limited, the report responds to the need for reassurance that consumption of treated drinking-water will not have adverse effects on health. Particular concern centres on the potential of chlorine to react with natural organic matter and form a large number of by-products, some of which have been intensively studied as potential human carcinogens. With these concerns in mind, the report evaluates over 800 recent studies in an effort to clarify understanding of the chemistry and toxicology of disinfectants and disinfectant by-products, and provide a balanced assessment of the associated risks to human health.

Environmental Health Criteria, No. 216
2000, xxvii + 499 pages
[E, with summaries in F, S]
ISBN 92 4 157216 7
Sw.fr. 102.–/US \$91.80
In developing countries: Sw.fr. 71.40
Order no. 1160216
Electronic access: http://www.who.int/pcs/ra_main.html



In Preparation

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

Evaluation of the H₂S Method for Detection of Faecal Contamination of Drinking-water

The purpose of this book is to review the basis of the hydrogen sulfide test as a measure of faecal contamination of drinking water and the available scientific and empirical evidence for and against the test as a valid, useful and reliable measure of faecal contamination and drinking water quality. The report addresses the fundamental microbiological basis of the test, including its chemical and biochemical basis, what organisms it detects and how it detects and quantifies them and the reported experiences with its practical application to assessing water quality.

2003, 75 pages, [E only]
Electronic access only



Nitrate/Nitrite in Drinking-water

This report provides up-to-date information on Nitrate/nitrite in drinking water ranging from source, exposure, human health effect, measurement to mitigation strategies.

2003, approx. 200 pages, [E only]

Chemical Safety of Drinking-water: Assessing Priorities for Risk Management

This book provides methods and indicators to predict critical chemicals to monitor and manage among the hundreds of chemicals in drinking-water for which there maybe limited resources and information.

2003, approx. 150 pages, [E only]



Legionella and the Prevention of Legionellosis

Legionnaires' disease is a potentially life threatening form of pneumonia caused by *Legionella* spp. This document encompasses a review of risk assessment and risk management aspects of *Legionella* in a range of settings where exposure is possible.

2003, approx. 160 pages, [E only]



Impact of Treatment on Microbial Water Quality and Occurrence of Pathogens in Water Sources

A review document on treatment efficiency to remove pathogens and of the occurrence of pathogens in source waters.

The publication provides a critical analysis of the literature on removal and inactivation of pathogenic microbes in water to aid the water quality specialist and design engineer in making important decisions regarding microbial water quality.

March 2003, [E only]



Arsenic in Drinking-water

This report provides up-to-date information on arsenic in drinking water ranging from source, exposure, human health effect, measurement to mitigation strategies.

March 2003, approx. 650 pages, [E only]

Indicators: "Safer Drinking-water: Improving the Assessment of Microbial Safety."

This document considers the need to improve the assessment and management of microbial safety of drinking water, by moving away from monitoring simply as a tool to verify the safety of the finished product towards using results as a basis of risk management actions.

2003, Published by OECD and IWA publishing, [E only]



Water Safety Plans

The improvement of water quality control strategies, in conjunction with improvements in excreta disposal and personal hygiene can be expected to deliver substantial health gains in the population. This document provides information on improved strategies for the control and monitoring of drinking water quality.

2003, approx. 200 pages, [E only]

Fluoride in Drinking-water

This report provides up-to-date information on fluoride in drinking water ranging from source, exposure, human health effect, measurement to mitigation strategies.

2003, approx. 100 pages, [E only]

Protecting Groundwater for Health Managing the Quality of Drinking-water Sources

This document provides information on strategies for the protection of groundwater sources used for drinking-water as the first stage of an integrated approach to water safety management.

2003, [E only]



Microbial Water Quality in Piped Distribution Systems

A review of knowledge and practices

The development of pressurised pipe networks for supplying drinking water to individual dwellings, buildings and communal taps contributes to the development and health of most communities. This publication considers the presence and growth of microorganisms in distribution networks and the practices that influence their presence and growth.

2003, [E only]



Domestic Water Quantity, and Service Level

This new report reviews the relationships between water volume used and service level in the home and human health; and between access to water and human health. It tackles directly the issue of minimum volumes both in normal supply and in situations such as emergencies.

2003, 30 pages, [E only]

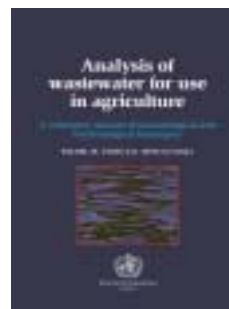


Global Water Supply and Sanitation Assessment 2000 Report

Reports the findings, by country and by region, of a global assessment of the water supply and sanitation sector in 2000. Prepared by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, the report uses a new methodology that gives both a more accurate estimate of access to water supply and sanitation and a better understanding of the many factors that influence changes over time. The report also compares current findings with data from 1990 and assesses the feasibility of reaching targets set for 2015.

Unlike previous monitoring exercises, which relied on information from service providers, the 2000 report uses consumer-based data drawn from household surveys. In another innovation, the report uses technology type as an indicator of access to improved water and sanitation. The definition of adequate coverage is now based on assumptions that certain technologies, such as public standpipes or pour-flush latrines, are better for health than others, such as unprotected springs and public latrines.

2000, 124 pages [E, F, S]
ISBN 92 4 156202 1
Sw.fr. 35.–/US \$31.50
In developing countries: Sw.fr. 24.50
Order no. 1150482



Analysis of Wastewater for Use in Agriculture

A Laboratory Manual of Parasitological and Bacteriological Techniques

An illustrated guide to the laboratory analysis of treated wastewater intended for use in agriculture. Noting that the use of wastewater for crop irrigation is becoming increasingly common, the book aims to help laboratories ensure that wastewaters intended for agricultural use comply with WHO guidelines for microbial quality. These guidelines were established by WHO in order to protect against the risk that wastewater irrigation may facilitate the transmission of excreta-related diseases. Two major risks are addressed: the transmission of intestinal nematode infections to crop consumers and agricultural workers, and the transmission to crop consumers of faecal bacterial diseases, including bacterial diarrhoea and dysentery, typhoid, and cholera.

Analytical procedures recommended in the manual are simple and effective, require minimum equipment, and can be carried out by persons with little or no previous parasitological or microbiological experience. All procedures are fully explained and clearly illustrated in over 40 photographs, including 20 colour plates. Relevant laboratory skills are also explained with the aim of encouraging standardized performance of procedures.

by *R.M. Ayres and D.D. Mara*
1996, iv + 31 pages [E, F, S, R]
ISBN 92 4 154484 8
Sw.fr. 12.–/US \$10.80
In developing countries: Sw.fr. 8.40
Order no. 1150432



Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture

Measures for Public Health Protection

Provides policy makers with the health based evidence for developing standards/regulations for the safe use of wastewater and excreta in agriculture and aquaculture. Presents and explains the full range of practical and technical factors that need to be considered when planning, designing, and implementing schemes for the safe reuse of wastewater and excreta in agriculture and aquaculture. Emphasis is placed on good wastewater and excreta use practices that minimize risks to health. In keeping with the need to conserve resources, the book also presents compelling arguments for the environmental advantages of reuse schemes, including increased crop yields, reduced requirements for artificial fertilizers, avoidance of surface water pollution, conservation of soil and freshwater resources, and desertification control.

by *D. Mara and S. Cairncross*
1989, vii + 187 pages [E, F, R, S]
ISBN 92 4 154248 9
Sw.fr. 35.–/US \$31.50
In developing countries: Sw.fr. 24.50
Order no. 1150324
Second edition in preparation [see next section]

In Preparation

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

Guidelines for the Safe Use of Wastewater and Excreta in Agriculture, Second Edition Volume 1

This document will provide an update to the influential 1989 *WHO Guidelines for the safe use of wastewater and excreta in agriculture and aquaculture*. The specific focus of this document is controlling the health risks associated with the use of wastewater and excreta in agriculture.

Guidelines for Safe Use of Wastewater and Excreta in Aquaculture, Second Edition

This document provides an update to the influential 1989 *WHO Guidelines for the safe use of wastewater and excreta in agriculture and aquaculture*. The specific focus of this document is controlling the health risks associated with the use of wastewater and excreta in aquaculture.

Guidelines for the Safe Use of Wastewater and Excreta in Agriculture: Supporting Evidence, Second Edition, Volume 2

This document provides the scientific background used to develop the *Guidelines for the safe use of wastewater and excreta in agriculture* through a series of key issues papers.

Health Aspects of Aquifer Recharge With Reclaimed Water

This document explores the health implications associated with reclaimed water of aquifers used as drinking-water sources.



**Monitoring Bathing Waters**

A practical Guide to the Design and Implementations of Assessments and Monitoring Programmes

This book, which has been prepared by an international group of experts, provides comprehensive guidance for the design, planning and implementation of assessments and monitoring programmes for water bodies used for recreation.

by *J. Bartram and G. Rees*

1999, 337 pages [E]

ISBN 0 419 24380 1

£24.99

To order or obtain information contact SPON. (see Information page)

In Preparation

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

Guidelines for Safe Recreational Water Environments

Volume 1: Coastal and Freshwaters

Volume 1 of Guidelines for safe recreational water environments provides an authoritative referenced review and assessment of the health hazards associated with recreational waters. It covers their monitoring and assessment, activities available for their control through the education of users, good design and construction, and good operation and management. The guidelines presented address a wide range of hazards including water quality (sewage pollution, naturally-occurring microbes, chemical constituents), physical hazards (leading to drowning and injury), and dangerous organisms.

Prepared by process of consensus amongst a large group of leading experts

Approx. 300 pages

Guidelines for Safe Recreational Water Environments

Volume 2: Swimming Pools, Spas and Similar Recreational Water Environments

This second volume provides guidelines on the health hazards associated with swimming-pools, spas and similar recreational water environments.

Prepared by process of consensus amongst a large group of leading experts **Approx. 200 pages**





Water Quality: Guidelines, Standards and Health

Assessment of risk and risk management for water-related infectious disease

The potential to increase consistency in approaches to assessment and management of water-related microbial hazards was tackled by an international group of experts concerned with drinking water, irrigation and wastewater use and recreational/bathing water. It included individuals with expertise in public health, epidemiology, risk assessment, risk management, standards and regulation, communication and economics. Subsequently, a series of reviews was progressively developed and refined, which addressed the principal issues of concern linking water and health to the establishment and implementation of effective, affordable and efficient guidelines and standards. This book is based on these reviews, together with the discussions of a harmonised framework and the issues surrounding it.

This book will prove invaluable to all those concerned with issues relating to microbial water quality and health, including environmental and public health scientists, water scientists, policy makers and regulators.

Edited by *L. Fewtrell and J. Bartram*
2001, 440 pages [E]
ISBN 92 4 154533 X
Sw.fr. 126.–/US \$113.40
In developing countries: Sw.fr. 88.20
Order no. 1150489

In Preparation

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

Heterotrophic Plate Count and Health

This text, prepared by an international group of experts addresses the 'heterotrophic plate count' test which is widely used in drinking water assessment: what it detects (and what it does not detect), its direct and indirect health significance and its use in the safety management of drinking water supplies. It includes the consensus statement from an expert review meeting and takes account of the presentations and posters at an international conference on the theme co-sponsored by WHO and NSF-International.

by *J. Bartram, J. Cotruvo, M. Exner, C. Fricker, and A. Glasmacher*
2003, 280 pages [E only]

***Mycobacterium avium* Complex**

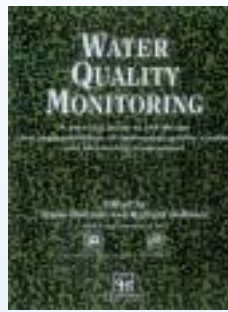
This report provides information on the *Mycobacterium avium* complex (MAC) in water. MAC is a leading cause of death amongst HIV positive populations. It reviews the organism, its health significance, procedures for its investigation and study in water, and weighs up the evidence that water is a significant route for its transmission.

2003, [E only]



All books on these two pages are distributed by Spon Press.

See Information page for the address.



Water Quality Monitoring

A practical guide to the design and implementation of freshwater quality studies and monitoring programmes

Water quality monitoring is a fundamental tool in the management of freshwater resources, and this book covers the entire monitoring process providing detailed guidance for implementing a monitoring network with step-by-step descriptions of field and laboratory methods.

Distributed by Spon Press, see Information page for address

Edited by *J. Bartram and R. Balance*
 1996, 383 pages [E]
 ISBN 0 419 21730 4
 £24.99



Water Quality Assessments (2nd edition)

A guide to the use of biota, sediments and water in environmental monitoring

This guidebook, now thoroughly updated and revised in its second edition, gives comprehensive advice on the designing and setting up of monitoring programmes for the purpose of providing valid data for water quality assessments in all types of freshwater bodies. It is clearly and concisely written in order to provide the essential information for all agencies and individuals responsible for the water quality.

Distributed by Spon Press, see Information page for address

Edited by *D. Chapman*
 1996, 626 pages [E]
 ISBN 0 419 21600 6
 £22.99





Water Pollution Control

A guide to the use of water quality management principles

This is a handbook for policy makers and environmental managers in water authorities and engineering companies engaged in water quality programmes, especially in developing countries. It is also suitable for use as a textbook or as training material for water quality management courses. It is a companion volume to Water Quality Assessment and Water Quality Monitoring.

Distributed by Spon Press, see Information page for address

Edited by *R. Helmer and I. Hespanhol*
1997, 510 pages [E]
ISBN 0 419 22910 8
£32.50



Monitoring Bathing Water

A practical Guide to the Design and Implementations of Assessments and Monitoring Programmes

This book, which has been prepared by an international group of experts, provides comprehensive guidance for the design, planning and implementation of assessments and monitoring programmes for water bodies used for recreation.

Distributed by Spon Press, see Information page for address

Edited by *J. Bartram and G. Rees*
1999, 337 pages [E]
ISBN 0 419 24380 1
£24.99



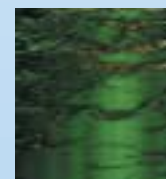
Toxic Cyanobacteria in Water

A Guide to their Public Health Consequences, Monitoring and Management

This book describes the present state of knowledge regarding the impact of cyanobacteria on health through the use of water. It considers aspects of risk management and details the information needed for protecting drinking water sources and recreational water bodies from the health hazards caused by cyanobacteria and their toxins. It also outlines the state of knowledge regarding the principal considerations in the design of programmes and studies for monitoring water resources and supplies and describes the approaches and procedures used.

Distributed by Spon Press, see Information page for address

Edited by *I. Chorus and J. Bartram*
1999, 416 pages [E]
ISBN 0 419 23930 8
£24.99






Guidelines for Cost-Effectiveness Analysis of Vector Control

Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM)

A step-by-step guide to the planning and implementation of analysis of the the costs and effectiveness of various options for vector control. Emphasis is placed on the use of this type of economic evaluation to generate data that can guide the judicious application of methods from among the many options available for vector control. Addressed to specialists who lack formal training in economics and epidemiology, the guide explains the techniques and procedures to follow when assessing and then comparing different interventions in order to achieve a specified objective at the least cost and make the most out of limited budgets.

Apart from their value as an aid to calculating and analysing the cost-effectiveness of interventions, the guidelines can also be used as a briefing for decision-makers and to acquaint medical entomologists, public health engineers, other vector control specialists and economists with evaluation techniques specific to the complex problems surrounding vector control.



by *M. Phillips, A. Mills and C. Dye*
PEEM Guidelines Series, No. 3
 1993, 192 pages [E, S]
 WHO/CWS/93.4
 Sw.fr. 33.-/US \$29.70
 In developing countries: Sw.fr. 23.10
 Order no. 1933026



Guidelines for the Incorporation of Health Safeguards into Irrigation Projects through Intersectoral Cooperation

Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM)

A practical guide to including health considerations into the planning of irrigation schemes as a basis for the design of measures that are both cost-effective and beneficial to health. Noting the many factors that can doom an irrigation scheme to failure, the book takes planners, managers, and engineers through each stage in the project cycle, alerting readers to potential problems and describing the precautions needed to ensure the dual objectives of increased agricultural production and better health status in a cost-effective way. The book also uses abundant practical examples to illustrate the interactions between design features, health status, and the ultimate success of a project.

by *M. Tiffen*
PEEM Guidelines Series, No. 1
 1991, 81 pages [E, F, S]
 Sw.fr. 25.-/US \$22.50
 In developing countries: Sw.fr. 17.50
 Order no. 1930025

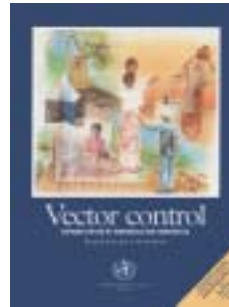


Guidelines for Forecasting the Vector-borne Disease Implications of Water Resources Development

Joint WHO/FAO/UNEP/UNCHS Panel of Experts on Environmental Management for Vector Control (PEEM)

A practical self-instruction manual for water resources and health professionals who need to make a rapid assessment of the health risks associated with a water development project in the tropics or sub-tropics at the early planning phase. Responding to the need for simplified impact assessment tools, the book uses worksheets, flowcharts, maps, tables, examples, and numerous classification schemes to give the processes of data collection and interpretation a structured framework. By facilitating the forecasting of health hazards and risks, the book aims to make it easier for engineers to design projects which safeguard public health, use opportunities to enhance community health status and protect the environment.

by *M. H. Birley*
PEEM Guidelines Series, No. 2
1991, xi + 128 pages [E, F]
Sw.fr. 33.-/US \$29.70
In developing countries: Sw.fr. 23.10
Order no. 1930026



Vector Control

Methods for Use by Individuals and Communities

The first comprehensive, illustrated guide to vector control methods suitable for use by individuals and communities. Published at a time when large-scale control programmes organized by governments are declining, the manual aims to help non-professionals understand the role of vectors in specific diseases and then select and use control methods that are appropriate, effective, affordable, and safe. Hundreds of simple, inexpensive and often ingenious techniques, developed and used in a host of different settings, are presented and described in this abundantly illustrated guide.

The manual is intended to assist health workers at district and community level, in aid organizations, in refugee camps, or in resource development projects who do not have direct access to experts in entomology, yet need methods for controlling the vectors of such important diseases as malaria, filariasis, leishmaniasis, schistosomiasis, dengue, and trypanosomiasis. With this audience in mind, the book combines non-specialist factual information about vectors and the diseases they cause with practical advice on control measures, whether involving the use of insecticides, environmental modifications, or the construction of simple devices from local materials. Details range from a table showing where and when the different groups of biting Diptera are active to a recipe for preparing plaster to protect homes against triatomine bugs, from step-by-step instructions for the construction of cheap insect traps to advice on how to impregnate bednets and curtains with suitable insecticides.

Selected "Best Medical Book of the Year" by the BMA Board of Science and Education. Vector Control was also awarded first prize in the competition's public health category.

prepared by *J.A. Rozendaal*
1997, xii + 412 pages (illustrated) [E, F, and Vietnamese;
Portuguese and Korean editions in preparation]
ISBN 92 4 154494 5
Sw.fr. 132.-/US \$118.80
In developing countries: Sw.fr. 40.-
Order no. 1150448





Health Opportunities in Development
 A Course Manual on Developing Intersectoral Decision-making Skills in Support of Health Impact Assessment

This manual presents in detail the principles of problem-based learning for the development of professional capacities to deal with issues of an intersectoral nature. Health is a cross-cutting issue in the development activities of many other public sectors. Both health sector professionals and professionals in the other sectors require to develop skills allowing them to successfully engage in intersectoral negotiations and action during project planning, design and operation.

The second part of the Manual is a practical, step-by-step guide on how to organise the course, in the context of one particular field of work, Health Impact Assessment of development projects. Preparations for and implementation of a task-oriented course are illustrated from the experience of five courses held in different parts of the world. The third part contains all course materials, including the Task Guides, guides for tutors and resource persons, generic course schedules and instructions for field trips. A CD-ROM is part of this set, and includes electronic versions of all materials contained in the guide as well as background text books and visual aids. The complete set consists of two volumes (Volume I: parts 1 and 2; Volume II: part 3) and a CD-ROM.



Slide Set on Environmental Management in Vector Control

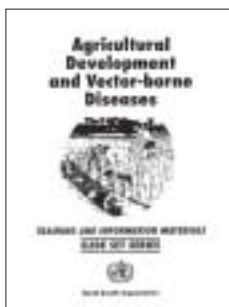
This set of training aids provides an introduction to the role of water resource management schemes in spreading a number of important communicable diseases of man. It limits itself to those diseases which are transmitted by invertebrate organisms whose life-cycle, either partly or wholly, is associated with the aquatic environment. These organisms can be flying insects, in which case they are called *disease vectors*, or certain species of aquatic snails, known as *intermediate hosts*. For practical purposes, in the accompanying text reference will be made to "vectors" on the understanding that this term includes the snail intermediate hosts of schistosomiasis. It presents a number of adverse conditions as they frequently occur in water resource development projects, followed by examples of environmental engineering measures which can be applied for their correction.

These training aids are first of all aimed at *engineers*, who are, or will be, responsible for the design and construction of irrigation and other hydraulic projects. However, they are also designed to serve as part of a package of educational material for the training of *vector control specialists*. They will hopefully contribute to a better, mutual understanding and collaboration between these two groups.



2003, 69 + 131 pages and CD ROM [E]
 by R. Bos, M.H. Birley, C. Engel and P. Furu
 ISBN 92 4 154563 1
 Sw.fr 75.-/US\$67.50
 In developing countries: Sw. fr. 52.50
 Order number 1150513

Vector Biology and Control Training and Information Materials, Slide Set Series
 1988, 46 pages + 90 colour slides and 25 overhead transparencies [E]
 Sw.fr. 110.-/US \$99.00
 In developing countries: Sw.fr. 77.-
 Order no. 1660009



Slide Set on Agricultural Development and Vector-borne Diseases

A set of 180 high-quality colour slides illustrating the multiple - and complex - effects that agricultural development can have on vector-borne diseases. The slides are accompanied by over 80 pages of background information, tips for effective presentation, advice on teaching techniques, and lively commentaries for each slide. The slide set responds to the frequent failure of planners and engineers to understand the health risks created by agricultural development and thus incorporate appropriate safeguards into water and land use schemes. With this problem in mind, the volume provides striking visual evidence of the many specific agricultural practices that can create ideal habitats for vectors, and endanger the health of large populations.

Slides and narrative text are organized into logical groups to facilitate the imaginative use of this material to meet a range of objectives for different audiences. Foremost among these are professionals in the agricultural and natural resources sectors, who need to be encouraged to work more closely with the health sector to prevent diseases associated with land and water resources development. The slides can also be used for training students and, when shown in their entirety, provide a comprehensive portrait of the links between agricultural development and the transmission of vector-borne diseases, including schistosomiasis, malaria, yellow fever, lymphatic filariasis, onchocerciasis, leishmaniasis, Japanese encephalitis, and African trypanosomiasis.

Vector Biology and Control Training and Information Materials, Slide Set Series

1997, iii + 83 pages + 180 colour slides [E]

Sw.fr. 250.-/US \$225.00

In developing countries: Sw.fr. 175.-

Order no. 1660013

Free of charge

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

Reducing and Eliminating the Use of Persistent Organic Pesticides: guidance on alternative strategies for sustainable pest and vector management

UNEP/FAO/WHO, 2002, 88pages [E]

Electronic access only:

<http://whqlibdoc.who.int/hq/2002/a76620.pdf>

by J. Mörner, R. Bos and M. Fredrix

Intersectoral Decision-Making Skills in Support of Health Impact Assessment of Development Projects. Final Report on the Development of a Course Addressing Health Opportunities in Water Resource Development

WHO, 2000, 42 pages, WHO/SDE/WSH/00.9 [E]

Electronic access only:

http://www.who.int/water_sanitation_health/HIA/WSH00-9.htm

Action Plan for the Reduction of Reliance on DDT in Disease Vector Control

WHO, 2001, 40pages, WHO/SDE/WSH/01.5[E]

Electronic access only:

http://www.who.int/water_sanitation_health/vector/ddt2.htm

Rapid Assessment of Correlations Between Remotely Sensed Data and Malaria Prevalence in the Menoreh Hills Area of Central Java, Indonesia. Final report.

WHO, 2002, 14 pages, WHO/SDE/WSH/02.06 [E]

Electronic access only:

http://www.who.int/water_sanitation_health/Documents/indonesia/finalreport.pdf

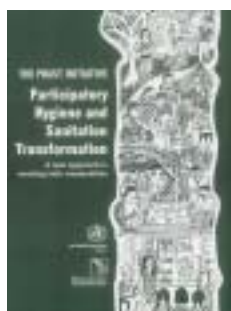
Human Health and Dams : The World Health Organization's Submission to the World Commission on Dams (WCD)

WHO, 2001, 38 pages, WHO/SDE/WSH/00.01 [E]

Electronic access only:

http://www.who.int/water_sanitation_health/vector/dams.htm





**The PHAST Initiative:
Participatory Hygiene and
Sanitation Transformation**
A New Approach to Working
with Communities

Describes an exciting approach, based on an innovative set of participatory techniques, that has demonstrated its ability to promote hygienic behaviour, sanitation improvements, and community management of water and sanitation facilities. Known as the Participatory Hygiene and Sanitation Transformation, or PHAST, initiative, the approach was carefully developed and tested in both urban and rural areas of four African countries: Botswana, Kenya, Uganda, and Zimbabwe. Results of these tests indicate an unprecedented involvement of communities, the particular suitability of PHAST techniques to resource-poor settings, and remarkable success in terms of environmental and behavioural improvements.



**PHAST Step-by-Step Guide:
A Participatory Approach
for the Control of
Diarrhoeal Disease**

A spiral-bound manual offering step-by-step instructions for helping communities improve hygiene behaviour, prevent cholera and other diarrhoeal diseases, and manage their own water and sanitation facilities. Addressed to facilitators working in the community, the manual uses the Participatory Hygiene and Sanitation Transformation, or PHAST, approach, an exciting new methodology which relies on locally prepared visual "toolkits" to stimulate community enthusiasm and participation. Recommended materials and activities were extensively field tested in four African countries.



Sanitation Promotion

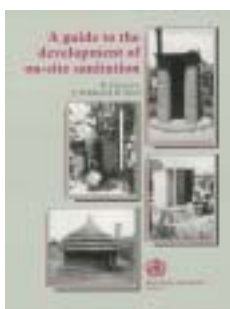
A collection of original articles, case studies, checklists, worksheets, and stimulating ideas aimed at raising the profile of sanitation and thus attracting the assistance and investments needed to make progress. Noting that tremendous efforts over two decades that have had little impact on sanitary conditions for much of the world, the book calls for a revolution in the way the sanitation sector defines its objectives and conducts its work. With this goal in mind, the book serves as a rich resource of ideas, solid lessons based on past experience, guidance on "best practices" in meeting a range of difficult needs, and some innovative new tools for both promoting sanitation and introducing ecologically-friendly technologies.

Although all areas of sanitation are considered, the major emphasis is on the management of human wastes.

1997, vi + 39 pages [E, F, S]
WHO/EOS/96.11
Sw.fr. 12.-/US \$10.80
In developing countries: Sw.fr. 8.40
Order no. 1930129

by *S. Wood, R. Sawyer and
M. Simpson-Hébert*
1998, ix + 126 pages [E, F]
WHO/EOS/98.3
Sw.fr. 16.-/US \$14.40
In developing countries: Sw.fr. 11.20
Order no. 1930131

WSSCC Working Group on Promotion
of Sanitation
edited by *M. Simpson-Hébert and S. Wood*
1998, xv + 277 pages [E, F]
WHO/EOS/98.5
Sw.fr. 40.-/US \$36.00
In developing countries: Sw.fr. 28.-
Order no. 1930147



A Guide to the Development of On-site Sanitation

Provides detailed practical and technical advice intended to guide the selection, design, construction, and maintenance of on-site facilities for the removal of human excreta. Addressed to engineers, sanitarians, medical officers, and project planners, the book concentrates on technical options suitable for householders building their own latrines, whether in small communities, rural areas, or deprived urban settlements. Details range from line drawings illustrating features of design and construction, through a list of reasons why improved sanitation may elicit negative responses from users, to instructions for calculating the internal dimensions of a septic tank.

The book features eleven chapters in three parts. Chapters in the first part introduce the foundations of sanitary practice, describe the links between excreta and disease, and explain the numerous social and cultural factors that must be considered at the planning phase. Chapters in the second and most extensive part provide a detailed technical guide to the design, construction, operation and maintenance of all the main options for on-site sanitation. Chapters describe how the different types of latrine work, discuss their relative merits, and set out detailed plans for the construction of latrines and their components. The final part features three chapters on the planning and development of on-site sanitation projects, underscoring the need for a thorough analysis of cultural as well as design features.

"... an intriguing book..."

– International Journal of Environmental Studies

by *R. Franceys, J. Pickford and R. Reed*
1992, viii + 237 pages [E, F, S]
ISBN 92 4 154443 0
Sw.fr. 47.–/US \$42.30
In developing countries: Sw.fr. 32.90
Order no. 1150380

Free of charge

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

Managing Water in the Home: Accelerated Health Gains from Improved Water Supply

The purpose of this report is to critically review the various candidate technologies and systems for providing microbiologically improved household water and to identify the most promising ones based on their technical characteristics and performance criteria. The characteristics and performance criteria for these are: effectiveness in improving and maintaining microbial water quality, reducing waterborne infectious disease, technical difficulty or simplicity, accessibility, cost, socio-cultural acceptability, sustainability and potential for dissemination.

2002, 69 pages, WHO/SDE/WSH/02.07[E]

Electronic access only: <http://www.who.int/phe>

The SAFE Strategy – Preventing Trachoma A guide for environmental sanitation and improved hygiene

This manual forms part of the comprehensive SAFE strategy that has been developed for controlling trachoma through the action of a combination of determinants including surgery, antibiotics treatment, facial cleanliness and trachoma control, which focus on improving hygiene and the environment.

by *S.P. Mariotti and A. Prüss*

WHO, 2000, 36 pages, WHO/PBD/GET/00.7 [E/F]

Requests for this document should go to WHO, Management of noncommunicable diseases, Blindness and deafness.

Email: trachoma@who.int





From 1988 to 1997 WHO coordinated the Operation and Maintenance Working Group of the Water Supply and Sanitation Collaborative Council (currently a Network on Operation and Maintenance).

The working group prepared documents dealing with different aspects of operation, maintenance and sustainability of water supply and sanitation systems.

These materials were developed by experienced water and sanitation experts and after extensive testing were finally published. The most important themes around operation and maintenance were considered.

Together, these materials represent an impressive set of valuable information for decision-makers and water supply and sanitation practitioners in developing countries.

24



Tools for Assessing the Operation and Maintenance Status of Water Supply and Sanitation in Developing Countries

Sets out a managerial framework, supported by specific assessment tools, for measuring and evaluating the status of operation and maintenance of water supply and sanitation services. Noting that problems with operation and maintenance have long been recognized as key constraints to sustainability, the book aims to encourage professional staff in utilities, local governments, and nongovernmental organizations to undertake performance assessments and use the results to introduce improvements. The book also aims to convince policy-makers that investments in water supply and sanitation will be optimized when management strategies give operation and maintenance a high profile. The assessment tools described can be applied to a wide range of activities carried out by utilities, governments, and communities in both rural and urban settings.

2000, iv + 46 pages [E]
WHO/SDE/WSH/00.3
Sw.fr. 14.–/US \$12.60
In developing countries: Sw.fr. 9.80
Order no. 1930180



Leakage Management and Control

A Best Practice Training Manual

This training manual is aimed at professionals responsible for operation and maintenance of water supply systems, who already have some experience of training. It will help the implementation of training activities and will be an important tool for trainers in the design, preparation and carrying out of training courses on leakage control.

by *M. Farley*
2001, 173 pages [E]
WHO/SDE/WSH/01.1
Sw.fr. 20.–/US \$18.00
In developing countries: Sw.fr. 14.–
Order no. 1930189



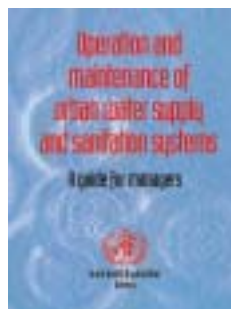


Operation and Maintenance of Urban Water Supply and Sanitation Systems

A Guide for Managers

Describes a systems approach to the operation and maintenance of drinking-water and sanitation services in urban areas of developing countries. Addressed to managers and other personnel with decision-making responsibilities, the book responds to ample evidence that poor management has had the greatest single negative impact on the quality of water supply and sanitation services. The guide, which is intended to serve as a reference source and conceptual framework, covers virtually all the procedures, activities, projects, and areas of managerial responsibility, at different levels, needed to ensure that water supply and sanitation services function continuously, efficiently, and to their full capacity. Emphasis is placed on procedures that can help control water losses.

1994, ix + 102 pages [C*, E, F]
ISBN 92 4 154471 6
Sw.fr. 23.–/US \$20.70
In developing countries: Sw.fr. 16.10
Order no. 1150416



Operation and Maintenance of Rural Water Supply and Sanitation Systems

A Training Package for Managers and Planners

A spiral-bound collection of training materials and activities designed to help planners, managers, and engineers improve water supply and sanitation projects through the better management of their operation and maintenance. Addressed to course facilitators, the manual contains abundant notes, background information, overheads, work sheets, exercises, and fact sheets specific to conditions seen in rural areas of the developing world. Information ranges from fact sheets describing the strengths and limitations of specific technologies, through a list of factors that influence a community's willingness to pay for services, to a discussion of nineteen tools for planning and working with communities.

The manual is intended for use in a two-week course or workshop with 12 to 15 participants. Course content, which was developed following almost seven years of field testing and revision, draws on lessons learned from the failure of many projects to produce sustainable services. Foremost among these lessons is knowledge that social, managerial, institutional, financial, and environmental issues are as vital to success as the technical features of project design.

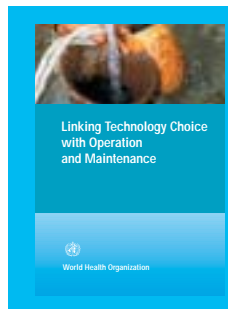
prepared by *F. Brikké*
2000, iv + 292 pages [E]
WHO/SDE/WSH/00.2
Sw.fr. 44.–/US \$39.60
In developing countries: Sw.fr. 30.80
Order no. 1930182





Upgrading Water Treatment Plants

A comprehensive and practical guide providing the technical detail required to upgrade existing water treatment plants to increase processing efficiency and improve overall quality. An invaluable reference for civil engineers.



Linking Technology Choice with Operation and Maintenance

The selection of a particular technology can have far-reaching consequences on the sustainability of the services provided as shown worldwide in the past decades, with a whole range of technical, financial, institutional, social and environmental implications. This reference document is designed to help planners and project staff in the selection of water supply and sanitation technologies for use in rural and low-income urban areas.



Edited by *G. Wagner and R. Pinheiro*
2001, 227 pages [E]
ISBN 0 419 26050 1
£29.99
*Distributed by Spon Press, see
Information page for address*

IN PREPARATION
ISBN 92 4 156215 3
Sw.fr. 35.-/US \$30.50
In developing countries: Sw.fr. 24.50
Order no. 1150515





Safe Management of Wastes from Health-Care Activities

This handbook provides the first comprehensive guide to the safe and efficient handling, treatment, and disposal of all categories of hazardous waste generated by health-care activities. Although the major emphasis is on waste generated by hospitals, guidelines and advice are also relevant to wastes produced in health centres, research facilities, and laboratories, or associated with home care or treatment in doctors' and dentists' practices.

In publishing this handbook, WHO aims not only to promote a sound managerial approach and the use of appropriate technologies, but also to inform countries about the health risks that result from inadequate management of health-care waste. With these goals in mind, the book provides both an alert to documented public health and environmental hazards and a catalogue of the technical, managerial, and legislative options available for reducing these risks. All components of a waste management policy – whether at national or institutional level – are considered in detail.

Although recommended policies and procedures have universal relevance, the handbook gives particular attention to conditions in developing countries, where methods for the safe treatment and disposal of hazardous waste may be limited. With these conditions in mind, the handbook includes approaches for gradual improvements together with a catalogue of options for waste management that include both simple and highly sophisticated technologies. Throughout, photographs, lines drawings, checklists, tables, and step-by-step procedures are used to enhance the practical value of the wealth of guidance provided.

This publication was awarded first prize in the public health category of the 2000 British Medical Association Book competition.

edited by **A. Prüss, E. Girault and P. Rushbrook**
1999, xiv + 230 pages + 4 colour plates [E, F*, C]
ISBN 92 4 154525 9
Sw.fr. 72.–/US \$64.80
In developing countries: Sw.fr. 50.40
Order no. 1150453



Teacher's Guide: Management of Wastes from Health-Care Activities

A spiral-bound collection of resource materials for use in a three-day training course focused on the safe management of health-care wastes. Course materials are aimed at an audience of managers of hospitals and other health-care establishments, policy-makers, and professionals involved in waste management. Noting that health-care waste has a higher potential of infection and injury than any other type of waste, training materials aim to both heighten awareness of specific hazards and illustrate the strategies – whether involving national legislation or safe practices at the institutional level – that can minimize these risks. The teacher's guide is a companion to the WHO handbook, *Safe Management of Wastes from Health-Care Activities*.

Training materials include ready-to-copy texts for overhead transparencies or slides, lecture notes, handouts, exercises, worksheets, and evaluation forms. Apart from drawing attention to the public health and environmental hazards of health-care wastes, material for the course includes abundant technical information on various safe options for waste segregation, storage, collection, labelling, transport, treatment, and disposal.

Specific training materials range from overheads listing the components of national programmes for waste management and outlining an action plan, through a handout illustrating technical options for waste treatment, to a worksheet for calculating the costs for construction and operation of an incineration plant. Advice on how to organize and conduct the course is provided together with suggestions for using problem-based approaches and supplementing the materials with locally-relevant examples and exercises.

by **A. Prüss and W.K. Townsend**
1998, v + 227 pages [E]
WHO/EOS/98.8
Sw.fr. 35.–/US \$31.50
In developing countries: Sw.fr. 24.50
Order no. 1930134





Guidelines for the Safe Disposal of Unwanted Pharmaceuticals in and after Emergencies Interagency Guidelines

A practical guide to the safe disposal of large quantities of unwanted or unusable pharmaceuticals donated during emergencies or as part of developmental assistance. Drawing on experiences gained during the war in Bosnia and Herzegovina, the guidelines respond to both the hazards of expired or spoiled drugs and the high costs of their sorting and disposal. Emphasis is placed on cost-effective methods that pose a minimum of risks to public health and the environment.

In Preparation

For information on availability of these documents, please refer to:
www.who.int/water_sanitation_health

Review of Health Impacts from Microbial Hazards in Health-Care Wastes

This document aims at reviewing the scientific literature for findings on health impacts from microbiological hazards of health-care wastes. It also reviews health impacts of similar exposures in similar circumstances, to evaluate health risks by analogy.

Although the available literature is relatively scarce, this document constitutes an initial review, to be updated as additional evidence becomes available.

It is targeted at scientists and public health professionals, and those involved in policy setting around health-care waste management.

WHO, 2003

Electronic access:

http://www.who.int/water_sanitation_health/index.html



1999, 31 pages [E]
WHO/EDM/PAR/99.2
Sw.fr. 8.–/US \$7.20
In developing countries: Sw.fr. 5.60
Order no. 1930154



In Preparation

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

WHO Guide to Ship Sanitation

Third edition

The *WHO Guide to Ship Sanitation* is the official global reference on health requirements for ship construction and operation and is directly referenced in Article 14 of the International Health Regulations. The *Guide* was first published in 1967 and reprinted with amendments in 1987. WHO is now updating the *Guide* in close collaboration with the shipping industry, Port Health Regulators, The International Maritime Organization and the International Labour Organization.

Expected 2004

WHO Guide to Hygiene and Sanitation in Aviation

Third edition

The *WHO Guide to Hygiene and Sanitation in Aviation* was first published in 1960 with a second edition in 1977. It is referenced in Article 14 of the International Health Regulations. The present volume predates the recognition of a number of important biological and physical hazards and, is now in revision. It is proposed that the revised *Guide* be evidence-based and cover communicable and non-communicable diseases, including the following topics:

- Food safety
- Water safety
- Liquid and solid waste disposal
- Aircraft interior cleaning (routine housekeeping and special circumstances)
- Vector control (including other vermin such as rats) at airports and on aircraft
- Aircraft disinsection
- Cabin air quality (ventilation, filter cleaning, chemical exposures, respiratory illnesses)
- Cosmic radiation
- Noise control
- Occupational Health (flight crew and frequent flyers)
- Ergonomics (DVT)
- Disease surveillance and notification
- Summary chapters for different users such as regulators, airport operators and airlines

Expected 2004

**Healthy Villages**

A Guide for Communities and Community Health Workers

Health is determined by many factors, including income, environmental conditions – such as access to adequate sanitation and safe water supplies – individual behaviour, and health services. More than half of the world's population lives in villages and rural areas and most of those without access to safe water sources or basic sanitation are rural dwellers.

Enabling rural populations to protect and improve their health is a major challenge worldwide. In response to this, an informal "healthy villages" movement has evolved. A healthy villages project promotes local actions by community members, mobilizing human and financial resources to build healthy environments and promote healthy behaviours.

This guide is intended to provide community leaders with information to assist them in implementing and sustaining a healthy villages project. It covers topics such as water and sanitation, drainage, waste management, housing quality, domestic and community hygiene, and provision of health services, providing extensive source materials for adaptation to local needs and conditions.

by *G. Howard with C. Bogh, G. Goldstein, J. Morgan, A. Prüss, R. Shaw and J. Teuton*

2002, ix + 109 pages [E]
ISBN 92 4 154553 4

Sw.fr. 22.–/US \$19.80

In developing countries: Sw.fr. 15.40
Order no. 1150494

**Children in the New Millennium**

Environmental Impact on Health

In the context of examining progress made since the 1990 World Summit for Children and the 1992 United Nations Conference on Environment and Development, this book provides an overview of key environmental risks to children's health and the underlying causes.

Highlighted are children's special vulnerability and susceptibility to environmental threats at each developmental stage, during pregnancy, infancy and early childhood, through to school age and adolescence. Specific environmental threats of major importance to children are described, including lack of safe water and sanitation, chemical pollution and radiation, indoor and outdoor air pollution and natural resource degradation.

The book also addresses the impacts of global environmental problems on children and future generations, including climate change, desertification, deforestation and the loss of biodiversity. A series of recommendations are proposed for action at the local, national, regional and international levels to improve children's environmental health.

2002, vi + 142 pages [E]

ISBN 92 4 159016 5

Sw.fr. 15.–/US \$13.50

In developing countries: Sw.fr. 10.–

Order no. 1150501

**Food, Water and Family Health**

A Manual for Community Educators

An illustrated manual, for use in health education, that encourages poor rural communities to introduce simple environmental modifications to promote health and prevent disease. Particular attention is given to elements of basic hygiene and sanitation that protect children from diarrhoeal disease. Written in a simple yet lively narrative style, the manual uses vivid stories, dialogue, and drawings to make its vital health messages relevant to the community setting. Information ranges from drawings illustrating the construction of filtration systems for drinking-water, through instructions for mixing oral rehydration salts, to advice on how fast-breeding fish species can be used to control mosquito larvae and improve nutrition.

1994, v + 99 pages [E, F]

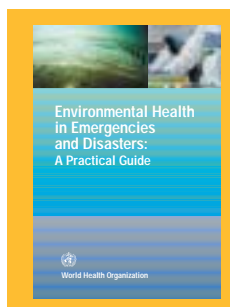
WHO/HEP/94.2

Sw.fr. 16.–/US \$14.40

In developing countries: Sw.fr. 11.20

Order no. 1930130





Environmental Health in Emergencies and Disasters: A Practical Guide

Drawing on the results of the International Decade for Natural Disaster Reduction (IDNDR) and experience of 'sustainable development' between the two Earth Summits (Rio de Janeiro and Johannesburg), this volume distills knowledge and practice of environment and development in disasters and emergencies. It is intended for practitioners as well as policy makers and researchers.

At the same time, this book is a compendium of best practices for risk reduction in the fields of:

- Shelter and emergency settlements
- Water supply
- Sanitation
- Food safety
- Vector and pest control
- Control of communicable diseases and prevention of epidemics
- Chemical incidents
- Radiation emergencies
- Mortuary service and handling of the dead

IN PREPARATION
 edited by *B. Wisner, J. Adams*
 2003, 200 pages approx. [E]
 Available March 2003
 ISBN 92 4 154541 0



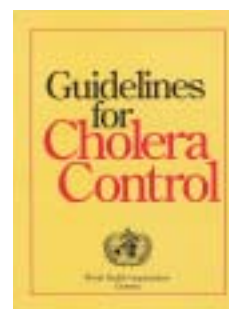
Water and Health in Europe

A joint Report from the European Environment Agency and the WHO Regional Office for Europe

Although some aspects of water quality and supply have improved in some countries over the last decade, progress has been variable. Renewed emphasis is being placed on microbial quality and the acknowledgement of previously unrecognized and re-emerging microbial and other hazards.

To this end the WHO Regional Office for Europe, in partnership with the United Nations Economic Commission for Europe, prepared a new Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. This publication provides information on many of the issues covered by the Protocol, such as adequate supplies of drinking-water and sanitation, water for irrigation and recreational use, monitoring of hazards, and public participation in decision-making. The evidence presented was collected through an extensive coordinated data-gathering process, in which many organizations and individuals throughout the European Region cooperated.

Edited by *J. Bartram, N. Thyssen, A. Gowers, K. Pond and T. Lack*
 WHO Regional Office for Europe
 WHO Regional Publications, European Series, No. 93
 2002, xxiii + 222 pages [E]
 ISBN 92 890 1360 5
 Sw.fr. 50.–/US \$45.–
 In developing countries: Sw.fr. 35.–
 Order no. 1310093



Guidelines for Cholera Control

Sets out the facts and advice needed to guide public health actions in response to an outbreak of cholera. Noting that the introduction of cholera into a country cannot be prevented, the book stresses the many things that can be done to prepare the health services, educate the general public, save the lives of patients, and prevent the further spread of an outbreak. The objective is to help managers of national diarrhoeal disease control programmes and non-governmental agencies to make the most effective decisions, whether concerning the selection of medical supplies or the emergency response to an epidemic.

Throughout, emphasis is placed on the importance of safe water, scrupulous personal hygiene, and careful food preparation as the most effective preventive measures. Readers are also alerted to public health interventions, such as vaccination, mass chemoprophylaxis, and cordon sanitaire, which are ineffective, wasteful, and therefore to be discouraged.

1993, vi + 61 pages [C, E, F, S*]
 ISBN 92 4 154449 X
 Sw.fr. 15.–/US \$13.50
 In developing countries: Sw.fr. 10.50
 Order no. 1150398



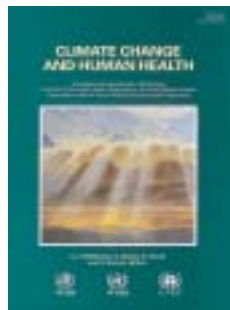


Prevention and Control of Enterohaemorrhagic Escherichia coli (EHEC) Infections

Report of a WHO Consultation

Records the results of a consultation convened to explore the health hazards posed by recent outbreaks of Escherichia coli O157:H7 and other enterohaemorrhagic E. coli (EHEC) infections. The report opens with a brief summary of what is known about E. coli O157:H7, its reservoirs, sources of food contamination, modes of transmission, and associated diseases, including haemorrhagic colitis and the haemolytic uraemic syndrome. The second and most extensive section profiles the epidemiology of EHEC infections in eleven countries: Argentina, Australia, Canada, Denmark, Germany, Japan, the Netherlands, South Africa, Sweden, the United Kingdom, and the United States of America. Topics covered include trends in incidence, systems of surveillance, methods of detection, the characteristics of recent outbreaks, and the measures used to contain them.

1997, ii + 43 pages [E]
WHO/FSF/FOS/97.6
Sw.fr. 10.-/US \$9.00
In developing countries: Sw.fr. 7.-
Order no. 1930107



Climate Change and Human Health

An Assessment Prepared by a Task Group on Behalf of the World Health Organization, the World Meteorological Organization and the United Nations Environment Programme

An expert scientific assessment of the impact that climate change might have on the health of the world's population. Addressed to policy-makers as well as researchers, the report adopts a cautious approach, using the best scientific studies to provide reasonable predictions and realistic recommendations for action. Throughout the report, the complexities of climate change, the limitations of current research methodologies, and the consequent uncertainty of future predictions are repeatedly emphasized.

Three years in the making, the book reflects the consensus reached by an international group of eleven experts in areas ranging from computerized simulations of climate to the behaviour of disease vectors in different ecological systems. A further 45 experts contributed to the report or reviewed relevant sections. Close to 700 references to the literature are included in this thoroughly researched and carefully argued report.

edited by *A.J. McMichael, A. Haines, R. Slooff and S. Kovats*
1996, xvi + 305 pages [E]
WHO/EHG/96.7
Sw.fr. 30.-/US \$27.00
In developing countries: Sw.fr. 21.-
Order no. 1930091

Free of charge

For information on availability of these documents, please refer to: www.who.int/water_sanitation_health

Methodology for Assessment of Environmental Burden of Disease

A report from a consultation of experts on the evaluation of disease burden from environmental risk factors. This consultation was part of an ongoing process aiming primarily at providing methodological guidance on the quantitative assessment of the burden of disease from environmental risk factors at national or regional levels and creating a network of experts interested in developing the conceptual and practical implementation of environmental disease burden assessment and sharing experience to define priorities in future developments.

by *D. Kay, A. Prüss and C. Corvalan*
WHO, 2000, 93 pages,
WHO/SDE/WSH/00.7 [E]
Electronic access only:
<http://www.who.int/peh/burden/methodologyhtm.htm>



Considerations in Evaluating the Cost Effectiveness of Environmental Health Interventions

This document has been developed with the aim to provide an overview of currently used methods for economic evaluation and to discuss implications of using these methods for evaluating environmental health interventions. It aims at formulating recommendations for future evaluations in environmental health. The document is intended to contribute to the methodological discussions, and in particular the development of guidelines for evaluation of cost-effectiveness in the framework of WHO's initiatives, and other ongoing work in this area. This work constitutes a background document with preliminary considerations of methods for economic evaluations in environmental health.

by **G. Hutton**
WHO, 200, 88 pages,
WHO/SDE/WSH/00.10 [E]
Electronic access only:
http://www.who.int/environmental_information/Disburden/WSH00-10/WSH00-10TOC.htm

The Protocol on Water and Health: What it is, Why it matters

The WHO-UNECE Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes is an international legal instrument on the prevention, control and reduction of water-related diseases in Europe. The Protocol, representing the first major international legal approach for controlling water-related disease, was signed at the Third Ministerial Conference on Environment and Health (1999) by 35 countries. It will become legally binding once at least 16 countries ratify it.

A user friendly booklet for ministries, local authorities, water professionals, health professionals, NGOs and all who care about and work for clean, healthy water.

Published by WHO Regional Office for Europe and the UN Economic Commission for Europe.
Electronic access only:
<http://www.unece.org/env/water> (full text of protocol)
<http://www.euro.who.int/documents/wsn/WatProt/index.html> (shorter web version of the brochure)
http://www.euro.who.int/watsan/MainActs/20011210_3

In Preparation from Spon Press

Water, Law, Development and Health

To make fundamental concepts used in water management and water use accessible and comprehensible to lawyers, and to assist scientists and managers to understand the process of development and implementation of water law. The context of the book is the ongoing freshwater crisis and the knowledge that trends are towards its exacerbation; and that well constructed and practical laws and regulations may contribute to addressing this effectively or may exacerbate it.

2003, approx. 300 pages [E]
Distributed by Spon Press, see Information page for address





Water for Health: Taking Charge

This report was launched on World Water Day 2001. It aims at raising awareness on the vital links between adequate clean, safe water and health, poverty alleviation, well being and overall sustainable development.



SaniCon Poster Set Six Posters

These posters are available in Acrobat PDF format, each is about 100K. They can be downloaded and printed on A4 paper. Their aim is to raise awareness on World Water Day – celebrated each year on 22 March.

The posters are:

- Sanitation and Safe Food
- Hygiene Saves Lives
- Sanitation Saves Your Blood
- Sanitation Saves Children
- Sanitation Keeps You Healthy
- Hygiene and Sanitation Saves Your Sight.



Water, Sanitation and Health Posters

A set of seven posters available in English, and three in French.

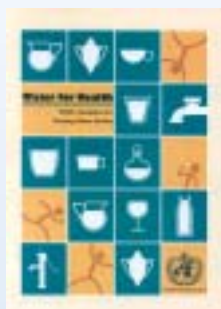
They can be downloaded and printed on A4 paper, and can be used at various events to promote Water for Health.

- Water, Sanitation and Health at the World Health Organization
- Health risks around the water cycle
- Water resource planning
- Improving water, sanitation and health reduces water-related diseases
- Water supply and sanitation - a basic human right
- Water Quality is vital for health
- Arsenic in drinking-water : a hidden poison

WHO, 2001, 35 pages,
WHO/WSH/WWD/01.1 [E, F]
Electronic access: <http://www.worldwaterday.org/2001/report/index.html>
Electronic access: French version :
<http://www.worldwaterday.org/2001/lgfr/news/report/index.html>

Electronic access: <http://www.worldwaterday.org/2001/photos/index.html>

Electronic access English:
http://www.who.int/water_sanitation_health/General/posters.htm
Electronic access French:
http://www.who.int/water_sanitation_health/General/postersf.htm



Water for Health WHO's Guidelines for Drinking - Water Quality

A four page brochure highlighting the rolling revision procedures of the guidelines for drinking-water quality.

Electronic access:
http://www.who.int/water_sanitation_health/GDWQ/DWQGbroschureE.pdf



Facts and Figures

A one pager highlighting the most important facts and figures concerning water supply, sanitation, and hygiene links to health.

Electronic access: www.who.int/phe



Fact sheets and features available on WHO web site

Electronic access to WHO fact sheets:
www.who.int/inf-fs/en/index_n.html

All fact sheets and feature stories provide the reader with main highlights and the latest information on the topic. They are also very useful as background and easy to use material.

Arsenic in drinking-water

(Fact sheet # 210, English, French)

Electronic access: <http://www.who.int/inf-fs/en/fact210.html>

Ship sanitation and health

(Fact sheet # 269, English, French)

Electronic access: <http://www.who.int/inf-fs/en/fact269.html>

Safe injection briefing note

(Fact sheet # 231/232/234, English, French)

Electronic access: <http://www.who.int/inf-fs/en/fact231.html>

Electronic access: <http://www.who.int/inf-fs/en/fact232.html>

Electronic access: <http://www.who.int/inf-fs/en/fact233.html>

Bottled drinking-water

(Fact sheet # 256, English, French)

Electronic access: <http://www.who.int/inf-fs/en/fact256.html>

Forty litres of water a day

(Feature story # 205, English, French)

Electronic access: <http://www.who.int/inf-fs/en/feature205.html>

Water - Too little or too much: the foremost cause of natural disaster

Fact sheets # 203, English, French)

Electronic access: <http://www.who.int/inf-fs/en/feature203.html>

Waste from health care activities

(Fact sheets #253, English, French)

Electronic access: <http://www.who.int/inf-fs/en/fact253.html>

Aide memoire on health care waste management

(English, French, Arabic, Russian)

Electronic access:

http://www.who.int/bct/Main_areas_of_work/DCT/Health_waste_management.htm



In Preparation

For information on availability of these documents, please refer to:
www.who.int/water_sanitation_health

Right to Water brochure

The objective of this brochure is to raise awareness to the right to water access as a serious and important health and human rights concern. Water is the essence of life. For poor people the lack of safe water constitutes as an acute deprivation and cause of ill health. The brochure will outline the scope and content of the human right to water and its relationship to other civil, cultural, economic, political, and social rights. In particular, water is closely linked and associated with the rights to food and nutrition, to work and to a healthy environment.

WHO, 2003

Electronic access: www.who.int/phe

WHO/FAO legal and regulations database

The purpose of this online database is to bring together country level water legislation information to be used as a tool for policy/law makers, professionals in international agencies and others interested in water law, regulation and management. The database is in preparation.

WHO, 2003

Electronic access: <http://www.waterlawandstandards.org/>

Access to the World Health Organization (WHO) web site:
www.who.int

Access to Water, Sanitation and Health at WHO:
www.who.int/water_sanitation_health/

Access to current and previous World Water Days web site:
www.worldwaterday.org

Access to WHO fact sheets
www.who.int/inf-fs/en/index_n.html

Access to information on safe health care waste management:
www.healthcarewaste.org

Access to information on environmental sanitation and health:
www.sanicon.net

Access to drinking water supply surveillance and monitoring in developing and transitional countries:
www.lboro.ac.uk/watermark



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- No. 215: Vinyl Chloride, **7**
- No. 216: Disinfectants and Disinfectant By-products, **9**
- No. 227: Fluorides, **8**
- No. 224: Arsenic and Arsenic Compounds, **7**
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**World Health Organization,
Geneva, Switzerland (Headquarters)**

World Health Organization
CH - 1211 Geneva 27, Switzerland
Tel. +41 22 791 21 11
Telex 415416 OMS
Fax +41 22 791 31 11
INTERNET: <http://www.who.int>

Marketing & Dissemination
Tel. +41 22 791 32 64/791 24 76
Fax +41 22 791 48 57
Email. : publications@who.int
bookorders@who.int
Website: www.who.int/dsa

Regional Offices of WHO**Africa**

World Health Organization Regional Office for Africa
P.O. Box 6
Brazzaville, Congo
Tel. +242 63 72 05/81 15 53/81 12 60
Fax +242 81 19 39/81 14 09
Email. : afro@who.org
Website: www.whoafr.org

Americas

World Health Organization
Regional Office for the Americas
Pan American Health Organization
525, 23rd Street, N.W.
Washington DC 20037, USA
Tel. +1-202 861 3200
Fax +1-202 223 5971
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