WORLD HEALTH ORGANIZATION

FIVE DECADES OF CHALLENGES AND ACHIEVEMENTS IN ENVIRONMENTAL SANITATION AND HEALTH

Looking back: Looking ahead

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

Printed in India, June 2003.

The World Health Organization

Established in 1948, with its headquarters at Geneva, the World Health Organization (WHO) is a specialized agency of the United Nations. It is governed by the World Health Assembly, consisting of representatives from 192 Member States, which meets at least once a year. The Organization is headed by the Director-General, who is appointed by the Health Assembly on the nomination of the Executive Board.

Six regional offices for Africa, the Eastern Mediterranean, South-East Asia, Europe, Western Pacific and the Americas have been established to further the purpose of WHO which is "the attainment by all peoples of the highest possible level of health". Their work is supported by technical committees which have enabled WHO to make notable strides in the eradication of diseases such as smallpox, polio, leprosy and guineaworm and the control of cholera, malaria and tuberculosis. WHO also deals with other global problems that directly impact on health; it has drafted and built consensus around important conventions concerning sanitary requirements and other measures for preventing the international spread of disease and has sponsored research on the problems of environmental pollution.

WHO has always maintained that sanitation is literally the foundation on which a sound public health structure must be built. Over the last 50 years WHO has generated, evaluated and shared new knowledge on safe disposal of excreta, sewage and community waste and been at the forefront of exploring the linkages between environmental pollution and change, and people's health and livelihoods. There is no doubt that people, especially poor people living in countries where basic infrastructure is lacking, are seriously affected by environmental degradation. In addition, the ongoing and deteriorating situation of sewerage causing environmental pollution needs urgent and serious attention.

This publication documents the history and experiences of WHO's involvement in environmental sanitation.

TABLE OF CONTENTS

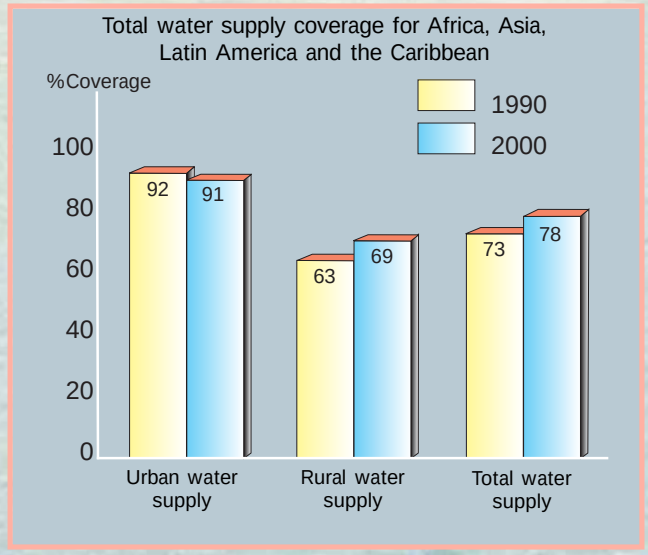
CHAPTER 1

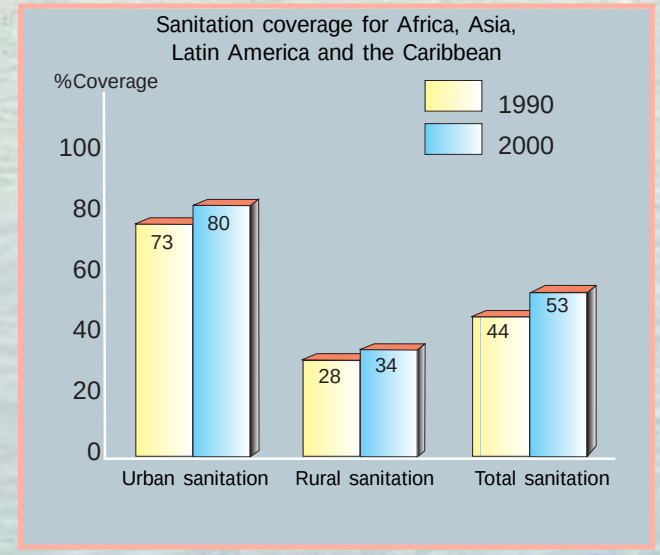
The Global Picture

Why action is needed to improve environmental sanitation

THE Millennium Development Goals (MDGs), adopted at the Millennium Summit of the United Nations in September 2000, call for a dramatic reduction in poverty and marked improvements in the health of the poor. Access to safe water and sanitation is fundamental for better health, poverty alleviation and development; and improving water and sanitation services has been recognized as a crucially important strategy towards meeting the MDGs. Such an achievement is feasible, but given the scale of the problem, especially for sanitation facilities, far from assured. Experience shows that while the importance of sanitation is recognized, progress is lagging far behind compared to the provision of safe water. The toll on human health is high, resulting in about 2 million deaths per year from diarrheal diseases and approximately 2 billion people infected with schistosomiasis and soil-transmitted helminth infections globally. A host of other diseases are related to poor disposal of human excreta, poorly constructed or managed latrines, and poor solid waste management and drainage. If the toll on human health and human life of all of these sanitation-related conditions could be effectively added up, it would truly reveal a tragedy of grave proportions. The statistics contained in this document illustrate the magnitude of the challenges that must be met urgently.

Water supply and sanitation should go hand-in-hand in community improvements, but unfortunately this is often not the case. Little has changed since the 1996 WHO/UNICEF Joint Monitoring Report concluded that: “Analysis of the global sanitation figures leaves the unavoidable impression that sanitation has been almost totally neglected in the four years from 1990 to 1994.The comparison with water supply progress makes it all too clear that investment in sanitation improvements remains a low priority for many governments and communities.” Recent statistics indicate that sanitation coverage can barely keep up with increasing populations. The decade from 1990-2000 saw a worldwide population increase of 15%, up from 5.27 to 6.06 billion people. During this same period, an enormous number, about 747 million people, have gained access to improved sanitation. However, the huge population increase means that, despite growth in absolute terms, the improvement in percentage coverage of sanitation facilities is less impressive: up from 55% (2.9 billion) in 1990 to 60% (3.6 billion) in 2000. This still leaves a total of 2.4 billion people without sanitation. The vast majority of these unserved people (93%) live in Asia and Africa. The greatest need for improvement is in rural areas and peri-urban areas.





Source: GWSSA 2000

Some facts and figures showing links between poor sanitation and health

- 2.4 billion people lack access to basic sanitation.
- 2 million people die every year from diarrheal diseases (including cholera) associated with inadequate water supply, sanitation and hygiene. The majority are children in developing countries.
- Water, hygiene and sanitation interventions reduce diarrhea incidence by 26% and mortality by 65%.
- 200 million people, in 74 countries, are infected with schistosomiasis and soil-transmitted helminths and 20 million suffer severe consequences.
- Basic sanitation reduces schistosomiasis by up to 77%.
- 500 million people are at risk from trachoma and 146 million are threatened by blindness.
- Trachoma can be prevented by improving sanitary conditions and hygiene practices.

The following examples illustrate why it is important that water and sanitation improvements should go hand-in-hand; they clearly highlight the health risks of using raw or independently treated wastewater in irrigation; a practice associated with a prevalence of intestinal helminth infection. They also point to practical ways of dealing with the situation to improve the health of affected individuals.

In **Mexico**, a study published in 2000 showed that partially treated wastewater was directly responsible for 80% of all *Ascaris* infections and 30% of diarrheal disease in farm workers and their families. By the simple expedient of holding wastewater longer in a series of retention ponds the risk of either *Ascaris* infection or diarrheal disease was reduced to a minimum.

In **Jerusalem**, a cholera epidemic in 1970 was traced to the consumption of salad vegetables irrigated with raw wastewater. Health authorities isolated the same cholera strain from infected individuals, sewage, irrigated soil, and the irrigated produce. The epidemic quickly subsided when the vegetables grown with the untreated wastewater were confiscated.

It should be pointed out that such risks are no longer confined and of just local importance. As food products travel greater distances to their place of consumption, the impact of poor sanitation will be increasingly felt in countries where people are confident that they are not exposed to sanitation-associated health risks.

CHAPTER 2

WHO and Environmental Sanitation

A priority from the beginning

IF health is seen not just as the absence of disease but also as a central goal of human development, then the protection of the environment and the protection and improvement of health are mutually supportive.

The sanitary revolution of the 19th century started in London in 1852, when the Metropolitan Water Act required the water supply to be filtered; soon after, John Snow demonstrated that, by turning off the pump at Broad Street (pumping water from the river Thames), the London cholera epidemics of 1855 would subside. The 1892 Hamburg cholera epidemic confirmed the association of polluted water and the disease. The routine bacteriological examination of London's water supply was introduced in 1885, and in 1908 the chlorination of water supplies started, becoming perhaps the most efficient and effective health technology at that time. In the Americas, the Pan American Sanitary Bureau (PASB), founded in 1902, advocated improvements in sanitation, sanitary sewage disposal, and soil drainage right from the outset. In 1936 the Health Organization of the League of Nations published reports on water supply, sewage treatment and the collection and treatment of domestic refuse. It was against this background of increasing international focus on environmental sanitation, that the Committee on Environmental Sanitation was established by the first World Health Assembly in 1948.

Water supply and sanitation: Milestones in the UN

1948	WHO assumes a constitutional function to promote the improvement of environmental hygiene.
1950	The Executive Board gives priority to rural environmental sanitation. WHO and UNICEF collaborate closely.
1957	First drinking water standards published by the WHO Regional Office for Europe.
1959	World Health Assembly decides a global "spearhead" program for community water supply.
1961	Charter of Punta del Este sets targets for water supply and sanitation.
1977	UN Water Conference in Mar del Plata.
1978	Launch of the International Drinking Water Supply and Sanitation Decade.
1980s	WHO links the IDWSSD with primary health care.
2000	UN announces Millennium Development Goals (MDGs).
2002	Target adopted at the World Summit for Sustainable Development to reduce by half the number of people who do not have access to safe sanitation facilities by 2015.

The Committee's first, groundbreaking report, published in 1949, concluded that physical development, health and survival, depended on the management of environmental factors which included excreta and community waste disposal; safe drinking water; food safety; healthy personal habits; understanding the causes of diseases; and, the control of disease vectors. It was decided to focus action on the reduction of those infectious diseases by monitoring how they respond to environmental management, and that the lessons learned in public health engineering from the sanitary revolution in Europe and the Americas would be of particular value. Changes from old patterns of life were an essential precondition for the achievement of better environmental health.

To spearhead these changes WHO was asked to develop/refine international sanitary standards and guidelines for national health services to involve them in priority environmental health programs, and to educate the public. WHO undertook to:

- Link environmental sanitation with other health-related activities.
- Cooperate with other UN bodies.
- Undertake demonstration projects, especially for rural sanitation.
- Promote research and disseminate information.
- Cooperate with governments in strengthening national health services in environmental matters, and develop human resources.

Since its inception in 1948, WHO had defined how it would pursue the achievement of "The improvement of sanitation, and other aspects of environmental hygiene" as called for in Article 2(l) of the Constitution. **The First World Health Assembly gave environmental sanitation the same priority as malaria, maternal and child health, tuberculosis, venereal diseases and nutrition and these priorities became known as 'the big six'.**

The devastating results of poor sanitation

Cholera is one of the most deadly diarrheal diseases. The cholera epidemic that began in Peru in 1990 and spread to 16 other countries in Latin America is the most striking demonstration in the recent history of the health effects of the lack of sanitation facilities and safe water. *Vibrio cholerae* – the pathogen that causes cholera – is thought to have reached the Peruvian coast in a contaminated ship's hull or via contaminated sea plankton. Coastal shellfish and fish were contaminated in turn and people who consumed this foodstuff then became infected themselves. A total of 378,488 cholera cases were reported in Latin America during 1991, most of them in Peru. By 1995 the number of new cases was decreasing. But the epidemic still prevails throughout the continent, with 85,809 cases reported by 15 countries in 1995. Cholera incidence in the Americas represented 41% of all cholera cases officially reported to WHO that year.

In Peru, where the outbreak was most severe, the abrupt halt in tourism and agricultural exports cost the Peruvian economy US$ 1,000 million in just 10 weeks. The total economic cost to Peru was more than three times the total national investment in water supply and sanitation improvements made in the 1980s.

Although the incidence of cholera has been falling in all regions thanks to efforts by many countries to contain the spread of the disease, cholera is once more on the rise worldwide. Officially notified cases do not reflect the overall burden of the disease, because of under-reporting prompted by fear of unjustified travel- and trade-related sanctions and other limitations in the surveillance and reporting system. The epidemic is expected to persist in the long term if water supply and sanitation problems in the developing world remain unsolved. Cholera can only be reliably prevented by ensuring that all populations have access to adequate excreta disposal systems and safe drinking water.

Note: Refugee camps, where large concentrations of people and poor hygienic conditions combine to generate major health risks, need special attention. In Zaire, for example, 58,057 cases of cholera were reported in 1994, mostly in refugee camps near the Rwandan border. Most of these cases could have been avoided by ensuring potable water, adequate means of excreta disposal and safe food.

CHAPTER 3

Historical Developments

Planning and implementing sanitation systems around the globe

IN 1948 the first session of the WHO Expert Committee on Environmental Sanitation declared that sanitation of the environment is literally the foundation on which a sound public health structure must be built. The Committee explored the relation of sanitation to health and the integration of environmental sanitation activities into national health programs, to help people to understand the need for personal hygiene and community sanitation initiatives and to encourage them to support such activities. It also urged the integration of environmental sanitation activities into agricultural and industrial projects if maximum health gains were to be achieved.

"Many millions of people are victims of diseases due to environmental conditions which can often be corrected by the rational application of known techniques...WHO should assist by disseminating technical knowledge, by exploiting the ingenuity with which workers in different countries have adapted techniques to local economic and environmental conditions, and by advising governments how to make the best use of available funds."

WHO's First General Program of Work

The 1950s: Field activities in rural areas

Between 1954-1959 WHO, in cooperation with UNICEF, initiated pilot projects focussing on rural sanitation in 27 developing countries. The aim was to demonstrate modern and effective techniques for combating disease through the introduction of safe water supplies and sanitary disposal of excreta. The emphasis was on dissemination of information on technologies, training and health education and the promotion of inexpensive technologies, such as latrines and small dug wells. Designed by WHO technical field staff, approved by national health authorities and executed by village artisans, the techniques introduced were found to be effective, and well accepted by the communities concerned. In several countries such as Pakistan, the projects were extended to cover new areas; but in most countries the 'demonstration' aspect of the projects alone was not sufficient to persuade the host governments to maintain and extend them beyond their original areas. It became evident that any successful large-scale rural sanitation project would need a solid institutional base and the assurance of long-term government support.

The 1960s: Support for urban systems

The WHO Program for Urban Water Supply was conceived in 1959 as a 'spearhead' to highlight the worldwide deficiency of urban wastewater disposal systems and the still unresolved problems of rural water supply and excreta disposal. The UN Special Fund (later the United Nations Development Programme, UNDP) received many requests for pre-investment studies of wastewater disposal and solid waste management projects. In order to ensure that the primary focus of such studies would be their beneficial impacts on human health, WHO, rather than the development banks, was asked to manage these projects. Over a span of 20 years, UNDP funded 33 pre-investment studies all of which were organized and managed by WHO. Nearly every study resulted in the financing and construction of new water supply and sewerage works.

During the 1960s, and parallel with these technical activities, WHO initiated a system of periodic reporting on service levels in the urban and rural water supply and wastewater disposal sub-sectors. Published at five-yearly intervals, the results were a factor in the decision of the UN General Assembly to launch the International Drinking Water Supply and Sanitation Decade in 1980.

The 1970s: WHO and sector development studies

During the 1970s, WHO initiated various activities to assist national authorities and international lending agencies, especially the World Bank and UNDP, in planning and executing national programs and projects. These activities included wide-ranging sector development reports on water supply and wastes disposal, tariff and financial subsidies, institutional and legal studies, and community participation and manpower training. Concurrent with these activities, WHO introduced new mechanisms for reviewing and perfecting technology for water supply and wastes disposal systems.
An International Reference Centre for Water Supply was created in cooperation with the Dutch authorities at the Hague and an International Reference Centre for Wastes Disposal was created in cooperation with the Swiss Federal Polytechnic at Dübendorf. Expert committees were convened to evaluate and advise on the use of conventional and new technological developments in water supply, sewage disposal, reuse of wastewater and solid waste management.

1981-1990: The 'Water Decade'

During the 1970s, WHO was one of the prime movers at various international meetings in stimulating the interest of countries and funding agencies to mount national programs which could improve the efficiency and thoroughness of water and waste disposal services, and approach 'total coverage' of both urban and rural populations. This effort culminated in the 1980 declaration, by the United Nations General Assembly, of the International Drinking Water Supply and Sanitation Decade, the aim of which was to achieve universal access to water and sanitation in developing countries. 'Access' was to be determined by individual countries but was understood to mean 20 liters of water per person per day from a source not more than 1.6 km distance and the safe disposal of excreta and waste. Donor organizations requested WHO to develop and maintain a computerized system on Country External Support Information (CESI). The analysis of this data showed that overall, service levels rose by more than 10%, with the largest increase in rural water supplies; but improvements could not keep pace with the population growth, which was running between 25%-30%.
So while the Water Decade saw big strides made in finding affordable technologies and participatory approaches to help serve those without access, the initiative failed to achieve the goals of universal access to safe water and sanitation.
A failure that demonstrated conclusively that 'business as usual' would never bring improvements quickly enough to cope with the backlog and provide access to growing populations.

The 1990s: Information management and advocacy

Drawing on lessons learnt from the Water Decade, a new strategy for water supply and sanitation was set up which focuses efforts on high-risk communities, with renewed emphasis on sanitation. Sanitation should be integrated with as

many other aspects of development as possible, such as programs on child survival, maternal and child health, essential drugs and agricultural development. The users of the services should be involved in all activities. These points have always been seen as essential for the success of environmental sanitation programs, but epidemiological studies have shown that in recent years they have not in fact been given the emphasis that they require. The Water Supply and Sanitation Collaborative Council (WSSCC), supported by WHO, was established in 1990, at the end of the International Drinking Water Supply and Sanitation Decade, to maintain the momentum of the decade. WSSCC has evolved into a leading international organization that enhances collaboration in the water supply and sanitation sector to accelerate the achievement of sustainable water, sanitation and waste management services to all people, with special attention to the unserved poor, by enhancing collaboration among developing countries and external support agencies and through concerted action programs.

At the end of the International Drinking Water Supply and Sanitation Decade (1981-1990), WHO and UNICEF decided to combine their experience and resources in a Joint Monitoring Programme (JMP) for Water Supply and Sanitation. At its inception, the overall aim of the JMP was to improve planning and management by supporting countries in monitoring their water and sanitation sector. Over the years, this concept evolved and the JMP included within its ambit the recurrent preparation of global assessments of the water supply and sanitation sector. To date, the JMP has published four global assessments. These reports provide information on water supply and sanitation coverage and on the progress made at the country level by local agencies in monitoring the sector. The global assessment 2000 report updates and consolidates findings of earlier reports, using broader and verifiable data sources.

The 2000s: Evidence for effective action

In the 2000s, WHO's priority actions on sanitation include:

- Establishing and consolidating the evidence base for public health benefits from improved sanitation, hygiene and water.
- Building national capacity and renewing the sanitation focus at the country level.
- Targeting high-risk communities.
- Integrating sanitation into sustainable development and poverty alleviation.
- Translating the International Development Targets (see Chapter 4) into action at the global, national and local levels.
- Monitoring progress on meeting the International Development Targets through the Joint Monitoring Programme with UNICEF.
- Working through partnerships to maximize information dissemination and increase sanitation coverage.
- Developing strategies for managing emerging sanitation-related health hazards.

In the poorest countries, WHO has estimated that the risk factor of unsafe water, sanitation and hygiene is one of the top three causes of morbidity and mortality. WHO is using this evidence to evaluate the impact and cost-effectiveness of interventions for reducing disease at the global level. Guidance is being developed to assist countries in estimating their own burden of disease and evaluating the cost-effectiveness of locally available options. Cost-effectiveness analysis is an important tool for protecting public health and making the best use of scarce resources.

An important focus of WHO's work has been on the right to health as well as the right to water. A rights-based approach is an important tool for targeting vulnerable and high-risk populations.

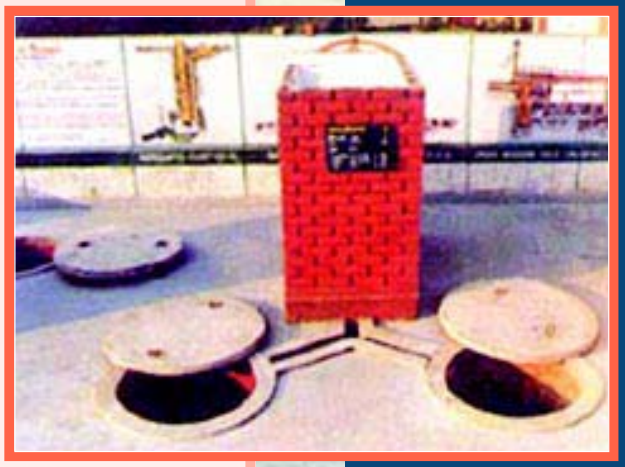
As new evidence and methods become available for analysing risk, WHO continually revises its normative guidelines and technical documents including those that cover wastewater use in agriculture, wastewater use in aquaculture, excreta treatment and healthcare waste management. To address sanitation, hygiene and water-related health concerns consistently, WHO created the 'Stockholm Framework' which uses risk assessment to define health targets and to develop basic approaches for controlling health risk. The Framework allows countries to adjust guidelines to local circumstances and compare associated health risks with risks that may result from all water, sanitation and hygiene-related microbial exposures.

South Asia: WHO in partnership with Sulabh International

Throughout the 1960s and 1970s, bucket latrines were in common use for excreta disposal in urban areas of India, Bangladesh, Nepal, Myanmar and Sri Lanka. Scavengers collected the waste, or night soil, which was carried as head loads for disposal at a dumping site. In India, the scavengers belonged to the untouchable or lowest caste. Mahatma Gandhi had consistently advocated the abolition of this degrading practice and, in recognition of his work, the Government of India, on his birth centenary, allocated substantial funds for the construction of sanitary latrines, which would eradicate scavenging.

Dr Bindeshwar Pathak, a social activist, believed that although the Government of India was committed to a policy of eliminating manual scavenging and promoting hand-flush latrines, it would be hard to achieve this target because a suitable design for hand-flush latrines, compatible with Indian conditions, did not exist.
So, in 1970, he founded Sulabh International to research a design for a latrine that was a people-friendly alternative to scavenging. As he explains in his own words, he was greatly influenced during his research by a WHO publication:

"During the course of my research I came across a remarkable WHO book, 'Excreta Disposal for Rural Areas and Small Communities', which was written by two brilliant sanitary engineers.This book provided me a glimpse of the breakthrough and the following sentence left a deep impression on my mind: ...Out of the heterogeneous mass of latrine designs produced over the world, the sanitary pit privy emerges as the most practical and universally applicable type."



Dr Pathak, working with Mr R.L. Das from Bihar, designed a two-pit pour flush design known as the 'Sulabh Shauchalaya' that fulfilled all the WHO conditions for a safe and hygienic human waste disposal system. He also developed an integrated approach to waste disposal by introducing the use of digested excreta as compost and the rehabilitation of scavengers through training for employment in more remunerative works. He introduced a small user charge, which covers the regular maintenance of community latrines.

In 1972, WHO supported a national consultation meeting, organized by the Government of India in Patna, to introduce State Chief Public Health Engineers to this integrated approach and to consider the feasibility of introducing it, with appropriate modifications to suit local socio-economic situations, countrywide.

By 1978, Sulabh International had constructed 10,000 latrines in Bihar and WHO conducted an appraisal of the work and communicated its favorable opinion to the Indian government. Based on the WHO findings, the Government of India asked UNDP to prepare a feasibility study for the installation of low-cost latrines in 110 towns in seven Indian states. The entire construction task was eventually handed over to Sulabh International, and successfully completed. Sulabh International continues to develop appropriate sanitation installations across India and has won national and international acclaim for this service.

Based on a paper by Mohan Lal Gupta,retired-WHO

Partnerships matter

The challenge of ensuring environmental sanitation coverage for all provides a good example of the need for partnerships. WHO itself represents the culmination of efforts in international health cooperation that began almost 150 years ago. Nations joined forces to combat common threats such as plague, yellow fever, cholera, smallpox, typhus and guineaworm disease. Much of what has already been done to control these major public health threats would have been impossible without a dedicated international effort. And much of what remains to be done to make the world a healthier place cannot be done by one organization alone. It calls for global strategies which build new partnerships between national governments, external support agencies, non-governmental organizations and the private sector. Similarly, increasing sanitation coverage calls for NGOs and community-based organizations with innovative approaches, for national action plans on health and the environment, political will at all levels, and for continuity from external support organizations. It also calls for community involvement in planning, implementing and maintaining their services. Predicted population growth means that, even with accelerated efforts, full sanitation coverage within the next few decades will be a major challenge. It is important that efforts are focused on those communities who are most vulnerable to ill health and disease.

Why people want latrines

The construction and maintenance of sanitation facilities is often an individual or household affair; piped networks are usually too expensive for the people currently without service, and would require a radically improved water supply service to function. On-site sanitation (pit latrines, septic tanks, etc) is appropriate for the unserved population in many rural areas, and is increasingly common in peri-urban and urban areas. But to be successful, sanitation programs need to provide education for behavioral change and to ensure community participation. Because of high levels of illiteracy, conventional training methods may be ineffective.

A survey of rural households in the Philippines elicited the following reasons for satisfaction with a new latrine. The reasons are listed in order of importance, starting with the most important:

- Lack of flies.
- Cleaner surroundings.
- Privacy.
- Less embarrassment when friends visit.
- Reduced gastrointestinal disease.

These results are echoed in other parts of the world. Candid personal reflection, even by health sector professionals, often reveals that health is a less intense motivator for sanitation than dignity, convenience and social status.

The importance of hygiene has only recently returned to the fore. Concerns about hygiene and the use, rather than simply the construction of latrines, are not new. What is new, is the rapid increase in epidemiological evidence pointing to the importance of relatively small behavioral changes in protecting families from fecal-oral disease. There is an increasing consensus that much of the health benefit of water supply and sanitation comes from the changes in hygiene they promote. People wash more often when water taps are conveniently located, and people are more likely to practise safe excreta disposal when there is a nearby latrine.

CHAPTER 4

Improved Sanitation = Better Health

Spreading the message through advocacy, supporting research, information dissemination

TO make environmental health a really potent force in the 21st century, important changes are needed. To some extent, these changes are a problem of money and resources and pose a political question: what priority should be given to environmental health within the full array of social needs and wants? But they also raise problems in communication, in education and in technology development itself.

Reflecting WHO's corporate strategy, WHO's water, sanitation and hygiene activities focus on six strategic areas of work:

- Ethical and evidence-based policy.
- Stimulating research and development, testing new technologies and comparing performance.
- Technical and policy support for sustainable capacity building.
- Setting, validating, monitoring and guiding the implementation of norms and standards.
- Assessing status and trends.
- Developing tools and guidelines for disease control and risk reduction.

Sanitation Connection www.sanicon.net

A major web-based network on all aspects of environmental sanitation was launched in November 2000. Called *Sanitation Connection*, it comprises an easy-to-access web portal offering comprehensive Internet resources to environmental health practitioners. Some of the themes covered on the site include financing and cost recovery, promotion of sanitation, school sanitation, solid waste management, low-cost sewerage and storm water drainage. The web address is www.sanicon.net. Users can click on the topic which interests them to read a short overview article, with references and links to web-based source material. Users will also be able to view pages of regional information so that they can link up with other initiatives in their area. *Sanitation Connection* will also help raise awareness of a problem which is fast becoming a major concern for environmental health and water and sanitation experts worldwide: sewage discharge. In the first phase, the primary language will be English, but it is intended to include other languages as the resource develops.

Sanitation Connection is a cooperative effort administered by the World Health Organization in partnership with the United Nations Environment Programme (UNEP), the Water and Sanitation Program (WSP), the Water Supply and Sanitation Collaborative Council (WSSCC) and the International Water Association (IWA). These organizations will ensure that pages are kept up-to-date and develop a set of frequently asked questions (FAQs).

SANITATION CONNECTION
An Environmental Sanitation Network

Participatory Hygiene and Sanitation Transformation (PHAST):
A new approach to working with communities

PHAST is an innovative approach to promoting hygiene, sanitation and community management of water and sanitation facilities. It aims to empower communities to manage their water and to control sanitation-related diseases, and it does so by promoting health awareness and understanding which, in turn, lead to environmental and behavioral improvements.

The PHAST initiative recognizes that much of the great shift in health-related behavior in the last century has been due to education and a recognition of the relationship between public and private sanitation facilities, behavior and disease transmission routes. Improvement in hygiene behavior alone has been shown to have a positive health impact whereas improvement in sanitation facilities alone may not bring health benefits. The ideal situation would be one where improvement in both behavior and facilities can take place simultaneously.

The main underlying community health-related principles of PHAST are:

- Communities can and should determine their own priorities for disease prevention.
- Communities collectively possess an enormous breadth of health-related experience and knowledge that includes both traditional and modern wisdom.

- Communities are capable of arriving at a consensus regarding the hygiene behavior and sanitation systems most appropriate to their specific ecological and cultural environment.
- When people understand that feces carry disease and can be harmful and why improved sanitation is to their advantage, they will act.
- Communities can identify appropriate barriers to disease transmission, based on their own perception of effectiveness and according to local resources.

WHO publications on sanitation and health www.who.int/pub/en/

WHO is a source of authoritative information about the links between sanitation and health. Over the last 54 years it has published a wide range of literature and a complete list is available at the World Health Organization Publications Website. Some of the areas covered include:

- Disposal of human wastes using dry latrine and water-carried methods.
- Technical options for home-built latrines, whether in small communities, rural areas, or deprived urban settlements.
- Guidelines on disease control methods for professionals responsible for public health in developing countries.
- The important links between health, travel and tourism.
- Methods for disposal and recycling of solid wastes (both household and commercial).
- Guidelines for the safe use of wastewater and excreta in agriculture.
- Environmental advantages of reuse schemes to conserve water and control desertification.
- 'Do it yourself' technical guide to the design, construction, rehabilitation, and maintenance of surface water drainage systems in low-income urban areas.
- Financial mechanisms for improving the management of water supply and sanitation services both large and small, urban and rural.
- Successful approaches in community involvement to promote hygienic behavior and sanitation improvements.
- Articles and case studies aimed at raising the profile of sanitation and thus attracting the assistance and investments needed to make progress.
- Disease control through improved hygiene.
- Training manuals to improve water supply and sanitation projects through the better management of their operation and maintenance.
- Guidelines and a training manual for health impact assessment of development projects.
- Manuals for environmental management and control of disease vectors.

Sanitation as an area of focus at the Johannesburg Summit

At the World Summit on Sustainable Development, held in Johannesburg, South Africa from August 26 to September 4, 2002, environmental degradation and its impact on health was one of the main issues for discussion. Through its involvement in the WSSD process, the World Health Organization was able to make important contributions to putting health at the center of sustainable development. Progress in this area has been disappointing since the 1992 Earth Summit, with poverty deepening and environmental degradation worsening. The United Nations were looking for a summit of actions and results to ensure that the children of today inherit a future free of the indignity occasioned by poverty, environmental degradation and patterns of unsustainable development.

As an implementation-focused Summit, Johannesburg did not produce a particularly dramatic outcome but governments agreed to, and reaffirmed, a wide range of concrete commitments and targets for action to achieve more effective implementation of sustainable development objectives. **Significantly, sanitation issues were critical elements of the negotiations and outcomes to a far greater degree than in previous international meetings on sustainable development.** Some important new targets were established including:

Halve, by the year 2015, the proportion of people who do not have access to basic sanitation. (This is a new International Development Target which gives sanitation the same priority as water.)

The Plan of Implementation issued by the Summit contained the following commitment to the action needed to achieve this sanitation target:

The provision of adequate sanitation is necessary to protect human health and the environment. In this respect, we agree to halve, by the year 2015, the proportion of people who do not have access to basic sanitation, which would include actions at all levels to:

(a) *Develop and implement efficient household sanitation systems;*
(b) *Improve sanitation in public institutions, especially schools;*
(c) *Promote safe hygiene practices;*
(d) *Promote education and outreach focused on children, as agents of behavioral change;*
(e) *Promote affordable and socially and culturally acceptable technologies and practices;*
(f) *Develop innovative financing and partnership mechanisms;*
(g) *Integrate sanitation into water resources management strategies.*

Africa 2000: A case study

Africa 2000 is an initiative by the African governments to facilitate and accelerate the provision of adequate safe domestic water supplies and appropriate sanitary facilities to the underserved African population. In response to the Africa 2000 initiative, Zimbabwe paid particular attention to the most disadvantaged areas or districts which are prone to outbreaks of diarrheal diseases. Monozi, in the Moshonaland Central Province, which was badly affected by the cholera epidemic in 1993, was selected as the pilot village for the development of the Africa 2000 program in Zimbabwe in September 1994. Before this, there was not even a latrine in Monozi, and only two boreholes with limited water yields. Today there are six functional boreholes and nearly every household has a fully utilized Ventilated Improved Pit (VIP) latrine.

The success of the Monozi village microproject, which was fully managed by the beneficiaries themselves, prompted Zimbabwe to expand the Africa 2000 initiative to seven other villages. Based on the Monozi experience, that is, on the village approach concept, a national project proposal was prepared and submitted to several organizations in an effort to mobilize funds for its implementation. The Africa 2000 program was officially launched by the Minister of Health and Child Welfare in September 1995; a task force was established, composed of representatives of the Ministry of Health and Child Welfare, the Ministry of Local Government, Rural and Urban Development, and the District Development Fund. WHO was entrusted with the coordination of the program implementation.

The WHO Regional Office for Africa provided support to initiate Africa 2000 sanitation activities in the selected villages. The beneficiaries contributed substantially either in providing or purchasing building materials and/or in working. Male and female latrine builders have been trained to ensure that the latrines are constructed according to specifications. In the eight villages where Africa 2000 activities have been carried out, 447 latrines have been built and are fully utilized.

The village approach concept is accepted at all levels of operation as an effective, community participative method, to ensure sustainability of the community-based water and sanitation projects.

CHAPTER 5

Future Challenges

FINDING an environmentally sustainable method of increasing sanitation coverage to reach those without services, as well as accommodating the population increases projected for the coming decades, is a challenge of urgent and crucial dimensions.

Today's global population of over 6 billion is expected to reach 7 billion by 2015. This growth will be largely concentrated in developing countries and estimates suggest that a further 1 billion people will be added to the 2.4 billion people currently without access to sanitation. To meet the sanitation targets agreed at the Johannesburg Summit -- *to halve, by the year 2015, the proportion of people who do not have access to basic sanitation* -- WHO estimates that an additional 150 million people would need to gain access to improved sanitation each year. Given the current expansion rates, these targets would not be achievable even by 2025, so the pace of expansion will need to accelerate rapidly. Governments and donors both need to recognize that increased levels of investment in sanitation are needed.

At present, 80% of the unserved (1.9 billion people) live in rural areas, and expanding access to villages will be an urgent priority. But as the largest share of projected population growth will be in urban and peri-urban areas, often in slums or informal settlements, efforts to reach these 'new' populations, especially in Asia and Africa, must also be stepped up.

Planning will also need to take into account regional disparities; Sub-Saharan Africa, where the percentage coverage for sanitation has actually fallen over the last 10 years, will need special focus. For this region, WHO estimates that more people will need to gain access to basic sanitation by 2015 than are currently served; a 106% increase will be needed to meet the sanitation coverage goal.

In urban and peri-urban centres, much of the sanitation expansion is likely to be in the form of sewerage. While sewer systems can protect the health of the user, health gains may be limited for the community as a whole because much of the wastewater is likely to be discharged into water bodies without adequate treatment. This would expose downstream users to human pathogens through drinking water, food or contact with contaminated water.

Sustainability of the expansion program is another huge challenge. As the world's population grows, freshwater will be in increasingly short supply and some estimates suggest 35% of the world's population will live in areas with chronic water shortages by 2025. Currently, water-borne sanitation systems use 50 to 100 liters of water to remove 1-1.5 liters of human excreta per day; in these systems, a small amount of feces then contaminates a large amount of water and nutrients that could be useful locally are washed away into other areas (or removed at great expense in a treatment system) where they concentrate. High levels of nutients cause environmental damage and exacerbate the growth of toxin-producing algae. Safe and sustainable sanitation alternatives that require less water and promote the safe use of nutrient resources need to be urgently developed.

Increasing access to improved sanitation is a crucial part of the development process, yet sanitation is often a neglected area when compared to the water sector, with levels of investment and coverage lagging far behind. For most poor families, demand for sanitation lags behind demand for water supply and funds for sanitation may be hard to find in a tight household budget. Experience shows that creating informed demand for sanitation requires long-term investment of resources and a strong and supportive political will. It may be necessary to educate policy-makers about the gains to public health resulting from improved sanitation and hygiene.

Urban vs rural

Although the greatest projected increase in population will be in urban areas, the worst levels of sanitation coverage at present are in rural areas. In Africa, Asia, Latin America and the Caribbean, rural coverage for sanitation is less than one-half that of urban areas. In those three regions alone, just under 2 billion people in rural areas are without access to improved sanitation, and just under 1 billion are without access to improved water supply. But although the greatest need for improvement of water and sanitation services is overwhelmingly in rural and peri-urban areas, future planners will need to be aware of rapidly changing demographics. As the global population shift from villages to towns continues, and as small towns develop into large cities and peri-urban areas become overcrowded slums, competition for water and sanitation services between unserved rural communities and the urban poor will intensify. Not least because, while the newly urban populations may have reasonable access to piped water, there is frequently no provision for sanitation; in addition, environmental degradation of every kind is likely to seriously affect their lives and their health. In 1997, the 50th World Health Assembly convened a new expert consultation to look at the factors which deprived high-risk populations, in both urban and rural communities, of environmental sanitation. In March 2000, an international workshop was held to develop a sanitation strategy to prioritize high-risk communities.

The World Summit on Sustainable Development has moved sanitation up the political agenda of the world community. But clearly there is a need for further specific thinking, among governments, sector specialists and community organizations, about how sanitation coverage targets are to be met.

Healthy environments for children

"The children of today are the adults of tomorrow.
They deserve to inherit a safer, fairer and healthier world."

At the World Summit on Sustainable Development in Johannesburg, WHO, together with other agencies, launched an alliance to stimulate a global movement to secure healthy environments for the children of the future.

The Healthy Environments for Children initiative is an essential component of the efforts of WHO and its partners to reduce global poverty and to reach the Millennium Development Goals. The overall objective of the intitiative is to scale up global action to address priority health dangers and risks in the places where children live, are educated, and play. A number of important risk factors will be focused on, in differing settings: for example, water and sanitation; insect vectors of disease; air (for example, indoor air pollution through solid fuel use and passive smoking); chemicals (for example, pesticides, lead); accidents in and around the home and unhealthy behavior.

The initiative will encourage a groundswell of action at the local level, in particular, through many sectors (including health, environment, education, housing, agriculture, energy, water, local government and social protection sectors). It will involve numerous community groups working alongside national governments within the context of national and local plans where they exist. The emphasis will be on getting different groups to work together on agreed strategies, but in ways that reflect their interests and strengths. The initiative will be as inclusive as possible, with emphasis on the stewardship of governments and of a supportive alliance of key organizations and institutions at the global, national, and local levels.

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