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"MAKING THE LINKS"

GUIDELINES FOR HYGIENE EDUCATION
IN COMMUNITY WATER SUPPLY
AND SANITATION

IRC
WATER AND SANITATION CENTRE

203.2-84MA-2439

"MAKING THE LINKS"

GUIDELINES FOR HYGIENE EDUCATION
IN COMMUNITY WATER SUPPLY
AND SANITATION

with particular emphasis on Public
Standpost Water Supplies

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07/19/84
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IRC International Reference Centre for Community Water Supply and Sanitation

The Netherlands

July 1984

FOREWORD

Background

Mention is often now made of the 'package' approach to community water supply and sanitation: the successful combination of water supply, sanitation and hygiene education. But despite this widening view it is clear that the often simple technology of water supply and sanitation frequently continues to mask the complexity of the system as a whole. A variety of organisational, social, economic and technical aspects must all be taken into account if systems are to work, be used and yield benefits.

This concept of integrated sector development has been a keynote of IRC work for some years and is reflected in the title of this current work. Through it we seek to highlight not only the links between water supply/sanitation and health and the importance of links with and within the community (both well reinforced in the following pages), but also the wider links between community hygiene education and the other vital components of a project.

Hygiene education is surely one of the most important of these components. Helping people develop their own understanding of the connections between the new facilities, everyday behaviour and health may indeed be the best key to the community adopting the project as its own and gaining full benefit from it.

But the linkages extend even further. Getting hygiene education right may lead to increased enthusiasm for and commitment to a project and thus help wider aspects of community participation. Financial management and operation and maintenance in particular can benefit from increasing community awareness and support.

The Public Standpost Water Supplies Project

The integrated approach is being promoted within the Public Standpost Water Supplies Project, an IRC demonstration project currently underway in Indonesia, Malawi, Sri Lanka and Zambia. The Guidelines have been written primarily in support of this project and there is therefore some light emphasis on public standpost supplies in the discussion.

However the text has been written so that it can easily be made appropriate for other types of projects (such as handpump schemes) or water supply and sanitation generally.

The Guidelines form part of a series of support papers to the IRC Public Standpost Water Supplies Project. Also available is a Selected and Annotated Bibliography on Public Standpost Water Supplies. Guidelines on Community-based Financial Management and Guidelines on Operation and Maintenance are planned for the near future. These papers are complementary to IRC's two technical papers on the subject area which form the basis of the project, ("Public Standpost Water Supplies" (TP 13), November 1979, and "Public Standpost Water Supplies, A Design Manual" (TP 14), December 1979.

The Guidelines

Many diseases are related to water and excreta and an adequate supply of safe water and proper excreta disposal are therefore very important in improving health. New water supply and sanitation facilities alone will not however have a full impact on health unless people use them properly and this requires lasting education in health and hygiene. These guidelines seek to support those responsible for this process.

The objectives of the guidelines are therefore to present a basic understanding of:

1. promotion of health in the community through participation;
2. reduction of water and sanitation related diseases;
3. transmission routes of water and sanitation related diseases;
4. hygiene education and audio-visual aids.

The Guidelines are primarily intended for community hygiene promoters (and their trainers or supervisors) and others involved with the Public Standpost Water Supplies Project in the participating countries. They could be used both as a source of information or revision and as a means of promoting a participatory approach to hygiene education. However a wider future use is anticipated and it is hoped that others may find the document of use at several levels in support of their work in this and other projects. The guidelines might for example be used to help planners, engineers, technicians, and survey personnel to become more aware of the importance of well constructed, convenient, reliable and well maintained water supply and sanitation facilities. Public health educators and primary health care workers could use the document to increase their understanding of feasible

preventive measures for water and excreta related diseases. School teachers might find information and suggestions in the guidelines for their school hygiene education programmes.

The Guidelines are thus very much intended as a starting point and we hope the document is freely adapted and amended for appropriate use. The issues have been discussed in straightforward English for ease of application, adaptation and translation into appropriate languages. Prior permission is not required for adaptation or use of extracts but the IRC source should be acknowledged. We look forward to critical comments on the Guidelines and to future editions taking these into account.

Finally it is worth re-stating that the most important aid to hygiene education can never be a set of guidelines, audiovisual materials or the like but rather the Hygiene Promoters themselves. What counts is their ability to stimulate and support the community in working things out and themselves 'making the links' between water supply/sanitation and the potential for improving health.

We hope this document may be of assistance in this work and in the general promotion of appropriate and participatory hygiene education at practical levels.

Michael Seager
Public Standpost Water Supplies Project

ACKNOWLEDGEMENTS

Credit for these Guidelines must rest in largest measure with the author Marieke Boot who has patiently and diligently drafted and developed them to take account of both the perceived need and the comments and views of others active in this field.

Grateful mention too is made of Alastair White and Christine van Wijk-Sijbesma who helped to review the first draft and of George Bedard for his editing. The very useful comments on the second draft by individuals and representatives of various organisations are greatly acknowledged. Special thanks go to Hanny van Eerden, Irene Eijckelhof, Paulette Kalker and Cynthia Raley for the text processing.

Parts of the Guidelines draw extensively on existing health related water and sanitation literature which proved extremely useful. A list of selected references is included in Annex D.

The kind permission of the following organisations to reproduce their illustrations is gratefully acknowledged:

- African Medical and Research Foundation, Kenya: page 23, 31, 43, 73, 74.
 - Afrolit Society, Kenya: page 7, 43.
 - Bureau d'Etudes et de Recherches pour la Promotion de la Santé, Zaire: page 51.
 - Care - West Java, Indonesia: page 29, 40.
 - Groupe de Recherche et d'Appui pour l'Autopromotion Paysanne, Upper Volta: page 11, 37, 49, 56.
 - Hesperian Foundation, United States of America: page 10, 32, 35, 57, 58, 68.
 - Macmillan Press, London: page 71, 74.
 - Ministry of Health, Indonesia: page 16.
 - Ministry of Health, Malawi: page 21, 63.
 - Ministry of Lands, Housing and Urban Development, Tanzania: page 12.
 - Ministry of Local Government and Lands, Botswana: page 13, 30, 67, 69, 73.
 - Peace Corps, United States of America: page 48, 59, 60.
 - Prime Minister's Office, Tanzania: page 39.
 - Shanta Bhawan Community Health Program, Nepal: page 9, 44.
 - World Health Organisation, Switzerland: page 42, 72.
- Illustrations on page 8, 18, 26, 27, 42, 55, and 61 were prepared by Moon Vaes and on page 28 by Arnold v.d. Klundert.

To all these direct and indirect contributors and others we should like to extend our sincere thanks.

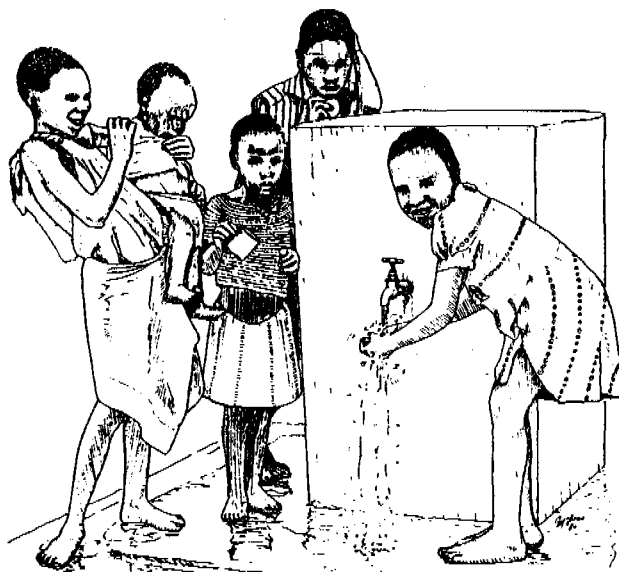
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INTRODUCTION

Many diseases are related to water and sanitation. Some of the most important ones are various types of diarrhoeas, worm infections, skin infections, eye infections, and insect borne infections.

Safe water supply and sanitation facilities like public standposts and pit latrines can help to prevent these diseases. But prevention of water and sanitation related diseases is not only a matter of new facilities. It is also influenced by hygiene behaviour. This is behaviour that helps to prevent water and sanitation related diseases. Hygiene behaviour is for example washing of hands, bathing, washing of food, cleaning of latrines, and so on.



This document provides guidelines to improve hygiene behaviour at community level. We have tried to give a general outline of what is important with respect to water and sanitation related improvements. But as we have no idea of your educational background and experience some parts of the book may be quite irrelevant to you. So please select what you need.

To facilitate your choice of what may be interesting for you to read, we made a sub-division into four semi-independent parts or chapters:

1. Promotion of health in the community;
2. Prevention of water and sanitation related diseases;
3. Transmission routes of water and sanitation related diseases;
4. Hygiene education and audio-visual aids.

Chapter 1 covers a discussion of how to promote community health by community-based hygiene education activities. This chapter forms the backbone of the document. The other chapters can be used as resource chapters to chapter 1.

Chapter 2 provides a discussion of the ways in which water and sanitation related diseases can be prevented or reduced by the people in the community.

In Chapter 3 a short description is given of the main water and sanitation related diseases and the ways they are transmitted from one person to another. This chapter is not meant to provide medical information but to impart a basic understanding of these diseases and their causes according to medical science.

Finally, chapter 4 provides information on the development and use of audio-visual aids in community based hygiene education programmes.

In the guidelines special attention is paid to public standpost water supplies. This is because the document was primarily written for use in public standposts water supply projects. But with the help of Annex B, the document can easily be used in other water supply and sanitation projects as well.

We hope these guidelines can lend you a hand in planning and organising community-based hygiene education activities. Please let us know your experiences as they can help us to prepare new guidelines.



1. PROMOTION OF HEALTH IN THE COMMUNITY

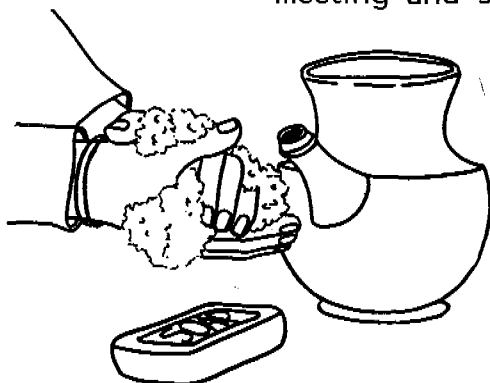
In this chapter there will be a discussion on how to promote hygiene behaviour to maximize the health benefits of new water supply and sanitation facilities. The following sub-division is used:

- 1.1. How to bring about changes;
- 1.2. The start of a hygiene education programme;
- 1.3. Planning and organising hygiene education activities.

1.1. HOW TO BRING ABOUT CHANGES

1.1.1. The adoption of new practices

Let us assume we want to promote handwashing in a community where it is not a general practice. We could call a meeting and say something like: 'Please listen, ladies and gentlemen. Diarrhoea is caused by germs. These germs spread on your fingers. So never forget to wash your hands after defecation and before handling food. Hand washing will prevent diarrhoea.' To make it more clear we perhaps show pictures of the transmission routes of diarrhoea and a picture of a healthy and happy family washing their hands.



What do you think of this approach? Will all people wash their hands from now on? Unfortunately not. Experience shows that this approach does not work well.

For most people the talk will have no practical meaning. To talk about germs will be too unfamiliar as germs are no part of our daily life. We cannot see germs with our naked eyes. People may want to believe the talk but will forget all about it the next morning as nothing reminds them of the harmful germs. We do not talk about germs when we discuss the possible causes of the diarrhoea of our son or our neighbour. We will say: "He fell ill with diarrhoea because of....." And then there will follow one or more possible reasons why our son or neighbour fell ill.

We all have some ideas about what causes diarrhoea. These ideas might be right or wrong from a medical point of view, but they are always based on daily life experiences. And experiences are always an important motivation factor for behaviour.

Methods to Discuss disease transmission: an example *

A mother listens to a health promotor explain the causes of her child's diarrhoea and what she can do to prevent it. But she has a hard time believing that the flies in her home have anything to do with diarrhoea. She has never seen the things called germs. She thanks the health promotor for her advice and does nothing about the flies.



People, quite wisely, do not accept new ideas unless they understand them and how they relate to their lives. People often will understand a new idea if it is compared to something they already know about. Let us look at this example:

"Do you have feet?"

"Yes!" Feet are shown with laughter.

If you step in faeces, do you get some of it on your feet?"

"Yes!"

"When you enter your house afterwards, does some of the faeces get on the floor?"

"Yes, if the faeces were fresh and wet!"

"Do you think that in the same way you get faeces on your feet, the fly gets faeces on its feet?"

"Yes".

.....And so the discussion continues.....

Association of ideas, as in the above example, can help people understand new ideas in terms of what is familiar to them. Association of ideas can be used in many forms: in stories, role plays, puppet shows, and so on. (See chapter 4)

* Adapted from: "Helping Health Workers Learn" by David Werner and Bill Bower, 1982.

So when we want for example to promote handwashing it will be more effective when we start with the daily life experiences of the people involved. And when we talk in daily-life language to make ourselves clear. Otherwise it will not have a practical meaning and surely will not lead to the adoption of the new practice. (See opposite page for an other example).

But even when people are fully convinced of the importance of hand washing, we cannot be sure that the new practice will be adopted just because of the talk. Why not? People will go home after the talk and return to everyday life. They might think: "it is true that we should wash our hands after defecation and before handling food". And then they may behave just like before. This is because there may be many reasons why we do not wash hands although we know it would be better if we did.

So there is a difference between knowing what is good for our health and doing what is good for our health. Often we forget this difference between knowledge and behaviour. Many hygiene education programmes are based on the assumption that when the right information is given, the right behaviour will follow. Unfortunately this is not true.

The discussion above shows that we cannot promote the practice of handwashing just by giving the right information alone. What else could be done? Let us first turn to another example and then discuss possible ways to facilitate the adoption of new practices.

Most people are aware of the health risks in bathing or washing clothes in water contaminated with schistosomiasis (see page 56). Why do people go into this water when they know the health risks involved? There may be many reasons.



One reason is of course that people usually do not fall ill immediately after contact with contaminated water. But probably a more important reason is that these people are used to bathing and washing clothes in this water and find it easy and convenient. Moreover when we are used to doing something in a particular way, we will have special feelings about it. We may have the idea that we will become cleaner when our whole body is in the water, or that clothes will get cleaner when we rinse them in surface water.

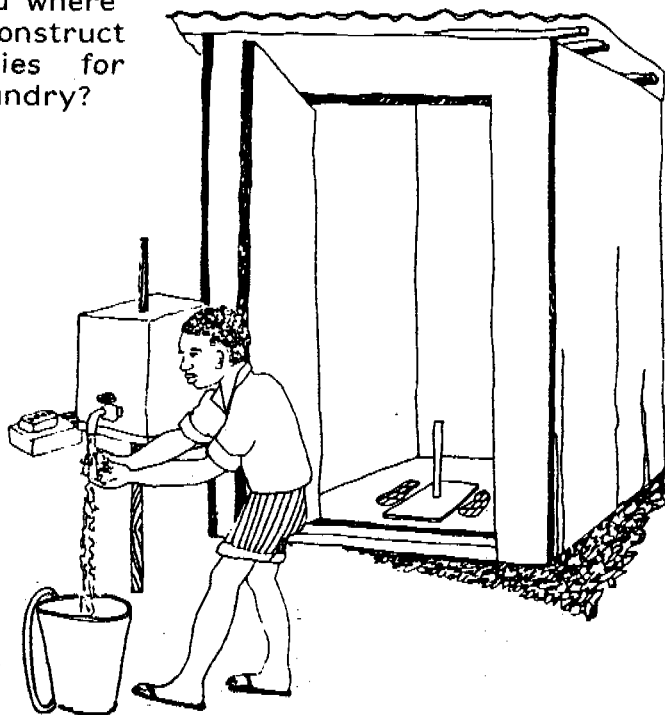
1.1.2. Ways to facilitate the adoption of new practices

In the foregoing section we touched upon several factors that might influence the adoption of new practices.

Convenience, ease and accessibility seem to be key factors in this process. So standposts are more likely to be used when they are easy to operate and give a continuous flow of water. Handwashing might be adopted more easily when water is always close at hand. Bathing and laundry at special sites will more likely be accepted when these sites are easily accessible, with plenty of water and without long waiting times.

Rather than to talk about disease transmission, it is often more important to discuss what is convenient and to find out how new practices can be facilitated. For example: What are suitable sites for the standposts so that everyone in the community can use them easily? How many taps are needed to prevent long waiting times? How can we arrange water close at hand for handwashing after defecation? How and where can we construct suitable facilities for bathing and laundry?

... water close at hand will facilitate the practice of handwashing: an example ...



There are more factors that may influence the adoption of new practices. On page 11 we discussed daily life experiences and prevailing practices as motivating factors for behaviour. That is why the promotion of new practices will be easier when we build our hygiene education activities on the existing experiences and practices. We can try to strengthen and reinforce the positive elements in it. Let us try to give an example on the promotion of handwashing.

In many societies unclean things are done with the left hand (e.g. anal cleansing), clean things with the right hand (e.g. handling food). We can reinforce the positive elements in this by discussing: "What kind of things are you doing with your right hand. What with your left hand? Why may it be important to use your right hand for other things than your left hand? Do you never use your left hand when you prepare a meal or eat your food?" And so on. This approach builds on the experiences and practices of the people themselves and can help to clarify the importance of handwashing.

*... sharing experiences
and discussing possible
improvements ...*



Status achievement is another factor that may influence the adoption of new practices. A well-known example is the latrine. Often the motivating factor for people to build a new latrine is not so much to improve their health as to improve their status. But if status achievement is the motivating factor we will have to take special care, that the new facility is not just a status-symbol, but also properly used.

Also key or reference persons (generally respected) will often influence the adoption of new practices. When these persons promote a behavioural change and give the right example, people are more inclined to give it a try. We will come back to this on page 24.

Of course there are many more ways to promote healthy practices. Above we gave some ideas and some more are given in the following sections and in chapter 4 where we will discuss the use of audio-visual aids to promote hygiene behaviour. However the best ways to promote behavioural change can only be learned from the people in the community itself.

1.2. THE START OF A HYGIENE EDUCATION PROGRAMME

1.2.1. Matching hygiene education activities with other project activities

There are many advantages in matching hygiene education activities with other activities in the water supply and sanitation programme. This is especially true at the start of the project.

First of all it will save time and prevent confusion as some activities can easily be combined. Think for example of the introduction of the programme into the community; a community survey of the present water and sanitation situation and practices, and so on.

Second, the matching of activities will create possibilities to stimulate the community to participate in the planning, design and construction of the facilities. This is especially important as only the people themselves can decide what are convenient solutions and easily accessible sites for the new water and sanitation facilities. And as we discussed before, convenience and accessibility are key factors in the adoption of new practices. It will increase community involvement and facilitate a proper use of the new facilities once they have been constructed. (See also page 12.)

Third, it will facilitate communications and cooperation between all parties involved in the water supply and sanitation programme (e.g. project staff, members of the community, hygiene promotor, local authorities). Communication and cooperation will help to find the most appropriate solutions in the given circumstances.

Fourth, the introduction of new water supply and sanitation facilities provides a good opportunity to discuss hygiene behaviour. People will be interested in what is going on in their community. They will ask themselves: "What is happening, and what will it do to our lives?" So this is the best time to capture the interest and attention of the people for discussing the health risks of the present situation and to promote practices that will improve their health.

Fifth, it takes time before people are willing and able to change their behaviour. So the sooner you start with hygiene education activities the better it is.

In practice it will not always be possible to match hygiene education activities with other project activities. That is why in the following sections we will leave it open whether or not you are keeping in line with the project activities.

1.2.2. Steps to start a hygiene education programme

a. Contacts with local leaders

One of the first steps will be to introduce yourself to the local authorities and/or local leaders. Inform them of your plans and ask for their approval and support.



This is not only a matter of good manners but it will also make your work easier. They can give you a first impression of the community, the various socio-economic groups, problems and needs, health situation, possible constraints, and so on. They can tell you what they think of the new water supply project and in what way they are willing and able to contribute. Together you can discuss possible ways to involve the community in hygiene education activities. They also can help you to find key persons who may become active community hygiene promoters.

b. Formal meeting

One of the next steps may be to call a formal meeting to inform the entire community of the programme and your plans. The organisation of a formal meeting is useful to give general information and to ask for general support. It is however not the right place to discuss things in detail.

In general meetings most people will only be listeners as there will neither be the time nor chance for everybody to give her/his view. In some societies some social groups do not attend formal meetings or cannot give their views during the meeting. Here we think especially of women, lower socio-economic groups, low caste people, and religious minority groups. (See also page 20.) In that case special attention has to be paid to other possibilities to inform and involve these people (e.g. through special or informal meetings, home visits, gatherings in religious centres, etc.).

During the formal meeting we can discuss the water supply project and the hygiene education programme; ask for people's opinions and their cooperation; explain the importance of hygiene behaviour; discuss possible ways to organise hygiene education activities and whether it might be a good idea to elect or appoint a special health committee.

c. The formation of a health committee

In most cases it will be a good idea to form a health

group to discuss, develop and promote specific local hygiene education activities, as it will be impossible to involve the entire community in this process. Sometimes the main community committee (e.g. village council or development committee) or the water committee could fulfill this task. In a small community this may be a good solution. In bigger communities it may create time pressures as these committees will have many other duties and responsibilities. In this case the formation of a special health group could be considered.

Who will be the members of this health group or committee? It is up to the community to decide who will be selected or appointed. Most likely these are leading people in the community. Their interest and support can greatly help to make the programme successful. But at the same time their selection may also create some problems. They are probably not very interested in a detailed discussion on for example how to promote handwashing. And probably they will be even less interested to discuss in detail possible ways to improve defecation practices. When these problems arise it may be better to discuss with the committee only the general outline of the programme and to provide them with relevant information on disease transmission. You can explain the importance of a detailed discussion and ask their approval to select a sub-committee or to form an informal group to make more detailed plans.

Who will be the members of a sub-committee or an informal group to make more detailed plans? Again, it is up to the community to decide. But as it is very important to find interested, capable and accepted persons, you may give some suggestions. The formation of a health group will take some time. We will come back to this point on page 20. First we will discuss some other steps you may take at the start of a hygiene education programme.

d. Getting to know the situation

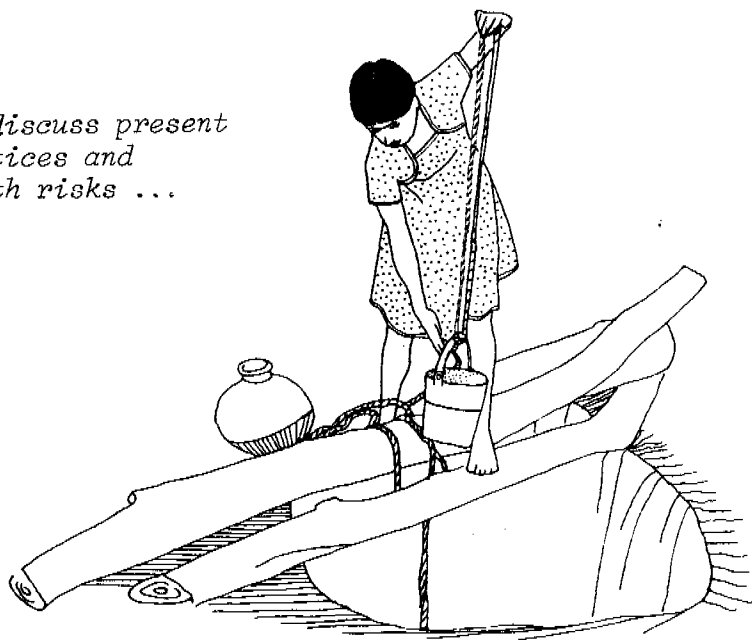
Another initial step is to organize a demonstration walk through the village or neighbourhood by asking interested people to show you around. It is always important to get yourself informed on the existing water and sanitation situation, prevailing practices and health risks. The better your impression of the various groups of people, their living conditions and their health behaviour, the better you can plan and organise hygiene education activities.

But it is not only important to get yourself informed. It is also important to get the community informed of

your intentions, to raise their awareness and to capture their interest and involvement. A walk around is a very good aid to do this. So the walk is also an important hygiene education activity in itself.

Explain your intentions; discuss where they fetch their drinking water now; what are the main problems and health risks; what do they expect from the new water supply; what do they think of improved sanitation facilities; and so on. Look around and discuss what you see. Take your time and involve the people around you, young as well as old people, male as well female.

*... discuss present
practices and
health risks ...*



Often it is easier for a female health promotor to walk around and address herself to the women of the community, to enter kitchens, or to visit bathing sites for women and little children. Being a male health promotor it may be necessary to find other ways to involve the women of the community e.g. by organising small meetings in the open air, or by asking assistance from female community workers/members.

Do not complete your demonstration walk when you have seen only a part of the village or neighbourhood. Probably you will have seen the best part but not the most important part. A walk normally starts where well-to-do people are living. Their water and sanitation situation and practices often involve less health risks than those of the poorer sections of the community. Look around and discuss the different conditions and their implications; compare the different health risks involved; and so on. Demonstration (walking around and pointing at things) and discussions with people

involved (to find out why they do things the way they do) are very important aids in every hygiene education programme. Use these aids whenever you can. (See also chapter 4.)

e. Involvement of other professional workers

At the start of a hygiene education programme we should also try to inform and involve other professionals in the area like doctors, primary health care workers, midwives, teachers, development agents, and so on. They can give you information on the living conditions of the community members, their health situation, school attendance, literacy rate, etc. They may give an input in your programme or you may take part in their activities.

Above we discussed some steps you might take at the start of a hygiene education programme. We do not suggest you to do everything, particularly not everything at the same time. Nor can we say which step is best or which step comes first. It is for you to find out what is the best way to start a hygiene education programme and how to approach the community. You will have to decide what is to be done first, with whom to talk first, what to discuss first. All we can say is that it is important to explain your intentions, to ask for formal approval, to raise interest and involvement and to get yourself informed about the local situation. This will help you to make the hygiene education programme a real community effort. It will also help you to plan and organise real community based activities for all the different groups of people in the community.

1.3. PLANNING AND ORGANISING HYGIENE EDUCATION ACTIVITIES

1.3.1. Hygiene education for all

A real impact on the health situation can only be expected if all people in the community use the new water supply and sanitation facilities in a proper way. Otherwise the risks of disease transmission will not be substantially reduced. This means that all people in the community need to have easy access to the new facilities and that all people in the community have to be involved in the activities to improve hygiene behaviour.

In some situations it may create problems to involve underprivileged groups (like low caste people, very poor people, minority groups) in general hygiene education activities. These people are often living in worse conditions and therefore form higher risk groups in disease transmission. That is why it will be necessary to take special care that these people can also participate in the hygiene education programme. (See also page 16.)

1.3.2. The formation of a health group

There are many advantages to plan and organise hygiene education activities in close cooperation with community representatives and community level workers. On page 16 we discussed the formation of a (sub-)committee or health group for this purpose.

In an ideal situation representatives of all social groups would be included in such a health group: women as well as men, young as well as old, poor as well as rich, and in caste societies lower caste as well as higher caste people. We also may think of a school teacher, primary health worker, medical practitioner, midwife, traditional well-digger, water vendor, etc. In reality however it will be nearly impossible to compose a health group with such a perfect mix. What can be done instead?

Members of the health group should preferably be interested persons who are easily accepted by most people in the community. Usually these persons belong neither to the privileged section of the community nor to the underprivileged section. In any case it is important to include some women in one way or another. Here we do not think only of the wives of the privileged but also of average women who are performing all or most of the household tasks themselves.

Why do we stress so much the involvement of women? In most societies women are the main water users. They

carry water home, use water for cooking and other domestic purposes, wash clothes, bathe little children, clean latrines, and so on. And women are usually responsible for the day to day teaching of children in proper hygiene and sanitation practices. That is why their involvement is very important. New water supply and sanitation facilities and new practices will affect them most. And what is more, they have a lot of daily life experience on which local hygiene education activities can be built. An input from women in the health group can greatly contribute to the planning and organising of successful activities.



Day-to-day teaching of children in proper hygiene and sanitation is often a woman's responsibility.

1.3.3. The hygiene education activities

Together with the health group all kinds of activities for community-based hygiene education can be planned and organised. Questions that should be considered by the health group are:

a. What kind of hygiene education activities?

The first thing to do is to decide which behavioural changes are to be promoted. Dependent on the most pressing health risks and health problems, the phase of the water supply and sanitation project, and local preferences and circumstances, a choice has to be made of what are the most feasible and profitable changes to introduce. In most cases it will be more effective to start with only two or three most desirable changes and to campaign for diffusion of these changes among the whole community.

b. Hygiene education activities for whom?

Apart from general hygiene education activities for all people in the community, special activities may be organised for various groups of people like: young mothers with weaning children; farmers working in the field; school children; children not attending school; key or reference persons; persons in charge of the operation and maintenance of the facilities; older people; people who are suffering from the same disease, for example scabies; people who are going to share the same standpost or the same latrine; heads of households; high risk groups; and so on. The main advantage of organising activities for special groups of people is that the activities can really be adapted to their needs and circumstances. We will have to take care however that this cannot be considered as stigmatising certain groups of people (e.g. families with scabies).

c. When to organise hygiene education activities?

Hygiene education activities can be organised at any time suitable for the community.

On page 15 we discussed the advantages of organising hygiene education activities around the work on the water supply project. These include activities at the time of the siting of the standposts; at the start of construction works; or at the time that the water project is completed and put into use. At those times it will be easier to capture the interest of the people in the community.

Special activities may be organised at the time of an outbreak of diarrhoea or when other water and sanitation related problems become acute. It is always easier to involve people in hygiene education activities when it relates to their present problems.

When hygiene education activities are planned it is important to choose suitable times of the day and the year to get the people involved. It does not make sense to organise a school programme around the construction of new facilities when the work starts during school holidays. Or it will be difficult for the people to participate in the activities when they are organised in the planting season and everybody is very busy working in the fields. Or it may create problems when hygiene education activities are organised for women after sunset, in case women are not allowed to walk outside in the dark without protection.

d. Where to organise hygiene education activities?

Apart from informal talks at any place we can visit the

people at home, organise special gatherings or include hygiene education activities in other programmes or gatherings.

Home visits may offer the best opportunities for effective hygiene education activities. At home we meet families in their daily circumstances. This makes it more easy to discuss present practices, problems and health risks. We can discuss what may be proper improvements and we can give practical examples. (See also page 62.) The main disadvantage of home visits is that they take a lot of time. Therefore it may be a good alternative to organise small neighbourhood meetings by asking a generally accepted member of the neighbourhood to organise a meeting at her/his house.

Home visits offer good opportunities for effective hygiene education activities.



When we want to concentrate on special groups of people we could organise special gatherings. For example for mothers with weaning children; families which share a same health problem; families living around a new standpost; and so on.

Another possibility is to include hygiene education in other programmes or activities. And then we may think of hygiene education activities for school children, literacy groups, credit associations, religious groups, youth associations, and so on.

Also informal talks with people in the community may offer good opportunities to discuss and promote hygiene behaviour. Discussions can take place anywhere: in tea-houses, at water collection points, in kitchens, in shops, on the market, during work breaks or in after-work social gatherings, and so on. Informal talks are often important aids to raise interest and to motivate people to change behaviour. The same can be said of demonstration walks through the village or neighbourhood (see page 17).

e. Who will take care of the hygiene education activities?

Of course you may do it as the hygiene promotor. But often it has much more impact when local people themselves - women and men - take care of the activities. Here we could think of: members of the health group, key or reference persons, persons in charge of the operation and maintenance of the facilities, school teachers or other professional workers. Reference persons for example can take a leading role in the promotion of new practices as people are more inclined to trust and follow these persons.

School teachers are usually quite willing to organise a hygiene education programme for school children when asked for their cooperation. Persons in charge of operation and maintenance can greatly help to promote a proper use of the facilities by explanations and discussions at the standpost sites, and so on. These persons may be men but at least some of them should be women as it is often easier for women to discuss with other women about water and sanitation related practices, to visit women at home and to join social gatherings for women. (See also page 21.)

Of course it may be necessary first to organise a hygiene education programme for these persons before they can become hygiene promotors themselves. But then it may save your time, the activities may have more impact and the promotion of new practices may go on after you have left the place.

f. How to arrange for follow up activities?

Even a most successful hygiene education programme will require follow up activities as people tend to fall back into former behaviour and old practices; as new children are born and other children will go to school; as the level of services may change; and so on. That is why it should be discussed what kind of follow up activities could be organised, by whom, and when or for which occasion.

2. PREVENTION OF WATER AND SANITATION RELATED DISEASES

This chapter provides a discussion of the ways in which water and sanitation related diseases can be prevented or reduced by the people in the community.

The following subdivision is used:

- 2.1. safe water;
- 2.2. safe excreta disposal;
- 2.3. personal and domestic hygiene;
- 2.4. safe handling of food;
- 2.5. safe waste water disposal/drainage.

Table 1 summarises the prevention of water and sanitation related diseases.

Table 1: Prevention of water and sanitation related diseases

- = very important to help prevent disease transmission
- = important to help prevent disease transmission
- . = not important

Disease	Safe water	Safe excreta disposal	Personal and domestic hygiene	Safe handling of food	Safe waste water disposal/drainage
Diarrhoeas	●	●	●	●	.
Worm-infections:					
a. roundworm	○	●	○	●	○
b. whipworm	○	●	○	●	○
c. pinworm	○	●	●	○	.
d. hookworm	○	●	○	.	.
e. guinea worm	●
f. schistosomiasis	○	●	.	.	○
Skin- and Eye- infections, and Louse-borne infections	.	.	●	.	.
Mosquito- and Fly-borne infections:					
a. malaria	○
b. yellow fever/dengue	○
c. filariasis	.	●	.	.	●
d. sleeping sickness
e. river blindness

Adapted from: Maximising Benefits to Health, WHO, 1983

2.1. SAFE WATER

The risk of disease transmission of diarrhoeas and worm infections can be greatly reduced when safe water is used for:

- drinking;
- cleaning of teeth and washing of mouth;
- handwashing;
- washing of vegetables and fruits;
- cleaning of kitchen utensils.

Water is safe when there is nothing in it that can cause disease. The problem is that we cannot see with our naked eyes whether water is safe or not. Even water that looks very clean can carry organisms that cause diarrhoeas and worm infections.

To be sure that the water we use is safe, contamination of water has to be prevented:

- a. at the water source and in the water delivery system (pipework and taps) (see below);
- b. between collection and use (see page 28).

2.1.1. Safe water from public standposts

In this section attention is paid to water from public standposts. Water from wells and handpumps is discussed in annex B.

Water from standposts can be spring water, groundwater or surface water. This water will be safe when:

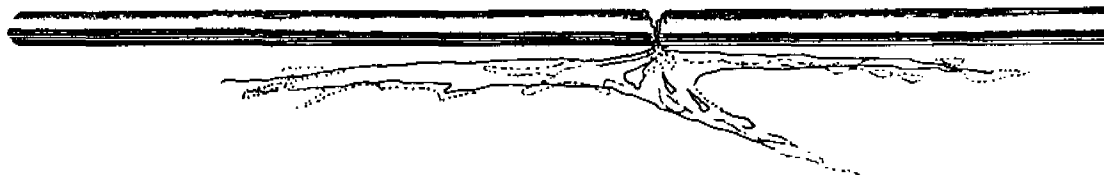
- either it is taken and comes from an area where no people are living, and the intake area is properly protected from human (and agricultural and industrial) contamination,
- or the water is adequately treated before it enters the piped system.



discuss with the community what can be done to guarantee that the water from the tap is as safe as possible

With the community and the project staff it could be discussed what can be done to guarantee that the water that enters the piped system is as safe as possible. (e.g. how to protect the area from which the water is taken (see also page 33); who can be made responsible for proper water treatment; etc.)

The water runs or is pumped through the pipelines from the intake to the taps. Sometimes water reservoirs are built in the piped system to guarantee a sufficient supply of water from the taps at times of peak use. In the pipes and reservoirs the water usually cannot get contaminated as there is no contact between the water and the outside world. Only when the pressure in the piped system is too low may unsafe water from outside seep through the pipe connections and contaminate the water in the piped system. Cracks and leaks in pipes or reservoirs can greatly contribute to this problem. They may not only cause a loss of safe water but as a consequence also create pressure problems and lead to unsafe water seeping in.



So to be sure of a safe water supply, the system has to be looked after and well maintained. Regular control of intake, pumps, pipelines, reservoirs and taps will be necessary to prevent failures and to repair leaks and breakdowns as soon as possible.

Most piped systems in towns or piped systems that cover big areas are looked after by appointed caretakers. Control of small systems in rural areas is normally a village responsibility. In that case the village will select a water committee and/or a local caretaker to look after the system. But apart from the appointed or selected caretakers the community could discuss that everybody can contribute to the protection of the intake area, the prevention of damage, the early discovery of breakdowns, the careful use of taps and the cleaning of the surroundings. This is all very important as many people may get ill when the water in the piped system is not properly protected from contamination.

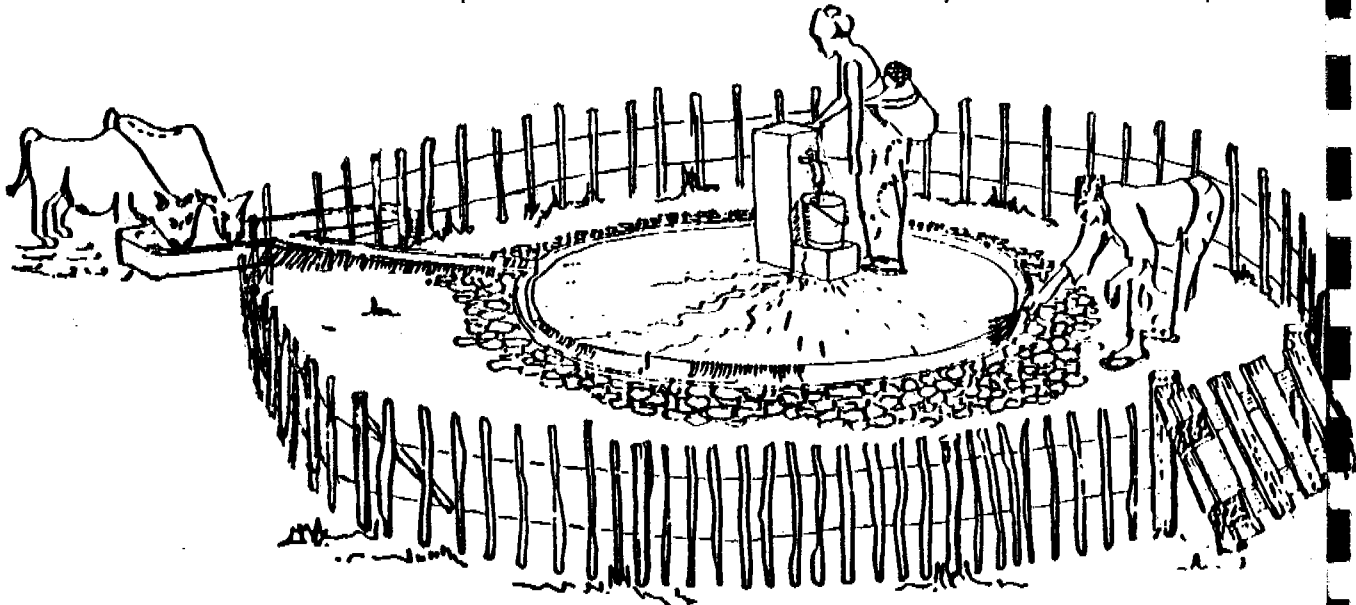
2.1.2. Prevention of contamination between collection and use

Prevent contamination of water at the standpost site

A permanent supply of safe water alone will not guarantee that the water we drink will be safe as well. Water may

become unsafe at any point between collection and use. The first point is the standpost itself and its immediate surroundings. Discussions with the community could include why it is important to:

- handle the taps with care;
- keep the taps clean and prevent children having mouth contact with the tap when they want to drink water;
- clean the place daily;
- clean the drains regularly so that waste water always can drain away;
- prevent the place around the tap from getting muddy (see also page 45);
- repair cracks in the concrete;
- bathe and wash clothes at some distance from the drinking water tap;
- keep cattle and other animals away from the standpost.



To help to prevent the risk of water contamination the community may consider to:

- ask a person living near the standpost to keep a watch on the system;
- construct special facilities at some distance for bathing and washing clothes;
- make a fence around the tap to keep animals away;
- construct special trenches at some distance to water cattle.

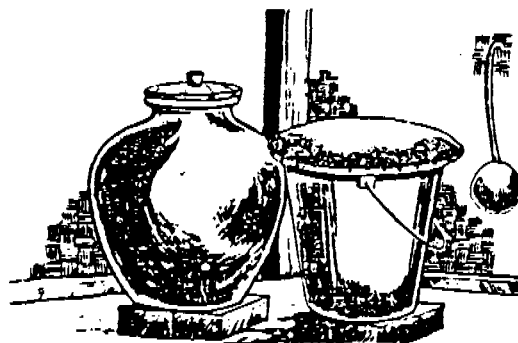
Prevent contamination of water between collection and use

Safe water can easily become unsafe when it is touched by unclean fingers; when it is poured in an unclean water container; when dirt or dust gets into the water; when unclean cups are used; etc. To prevent these possible risks the present practices of water collection, storage and use could be discussed. If necessary, improvements could be decided upon and promoted.

Points to think of in order to prevent contamination of water between collection and use are to:

- clean hands before collecting and carrying water, especially when fingers touch the water or the inside of the container while walking home (see drawing on page 8);
- clean container to carry water home from tap;
- carry water in a covered container when it has a big opening like a bucket or basin. This will also help to prevent spillage during the trip home. (Leaves or twigs used against spillage may cause contamination as they may be dirty);
- regularly clean container in which the water is stored in the house, e.g. whenever it gets empty;
- cover water container properly in the house;
- pour water out of the container without touching it or use a clean longhandled dipper to take the water out of the container;
- clean cups etc. in which water is taken and drunk.

... keep water containers covered and use a clean longhandled dipper to take the water out...



2.1.3. New standposts and old water supply sources

The standpost water supply is something new in the community. Whether or not people will accept and use the new water supply very much depends on the need for water and the convenience of the system. In dry areas with a serious need for water it will probably be more easily accepted and used than in wet areas where people can get water from many other sources. Here the convenience of the system will be the key factor for acceptance and use.

A convenient water supply system is a system that works properly (at affordable costs) and fits local circumstances. This means for example that all people in the community have easy access to one of the standposts; that the taps are easy to operate, also for children if they have to collect the water; that the system produces plenty of water for everybody, also during peak hours; that long waiting times are prevented; and so on. A

convenient system can only be planned and constructed in close cooperation with the people involved as they are going to use it.

Other factors that may influence the acceptance and use of the new standposts are the preferences of the people in the community. Again, this is particularly important in wet areas where people can choose between several water supply sources. People may prefer water from rivers, water where the sun shines in, water supporting a special kind of fish, and so on. Also colour, taste and smell may influence their preferences.

Preferences are based on custom and experiences in the past. They may differ from one community to another. For the success of the new standposts project, it is necessary to pay full attention to these local preferences and to discuss the reasons for these preferences and the possible health risks of the old water supply sources.

2.1.4. What to do when the standpost is out of order

Of course we hope that an interruption of the standpost service does not happen. But when it happens, what could be done?



*No water!
What to do?*

The first thing is to get it repaired (locally if feasible) as soon as possible. But meanwhile water is needed for drinking and domestic purposes. When only one standpost is out of order it could be discussed whether water could be fetched from other standposts or from a tap on a tank in the system. In other cases the people will have to go back to their old water supply sources. This water is not

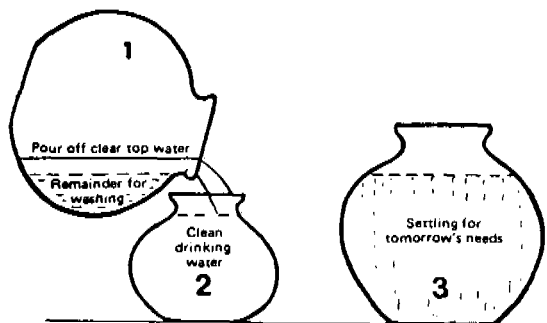
as safe as the water from the standposts and the risk of disease transmission may be serious.

To prevent infection with water related diseases from unsafe water the community could:

- a. boil all drinking water for 10 minutes. Water boils when it bubbles. However boiling of water may be a problem because of the fuel it needs. In that case it may be suggested to boil water at least for children.
- b. discuss local ways to treat the water. Most people will know some methods to reduce the risk of disease transmission. Below the example of the three pot system is given, but there are many more. A simple method to prevent guinea worm is to pass the water through a cloth before drinking. (See also page 55.)

The three pot system

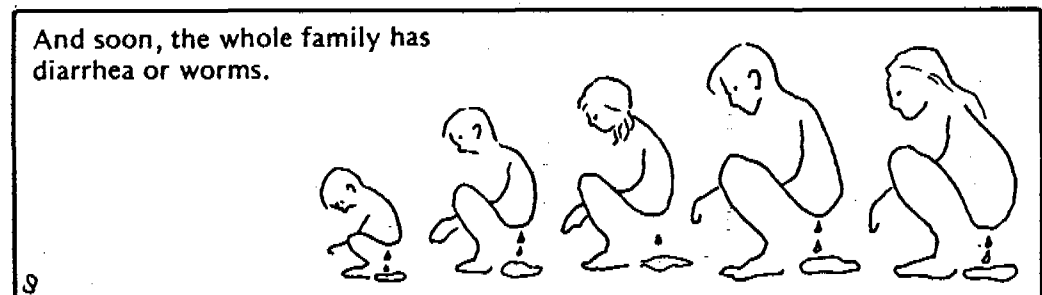
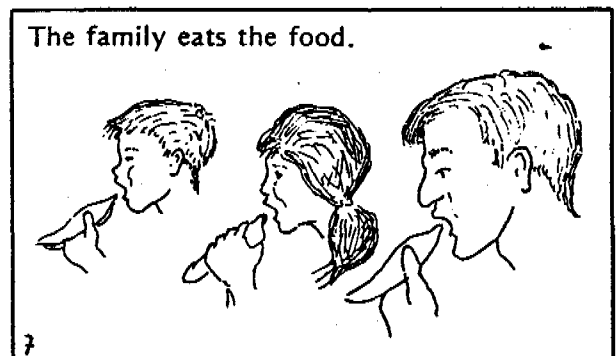
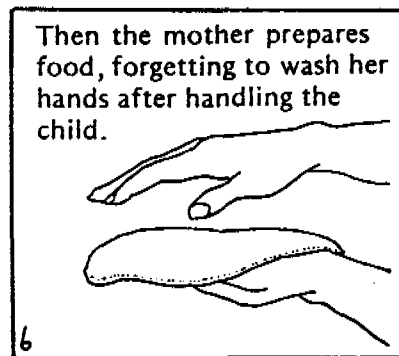
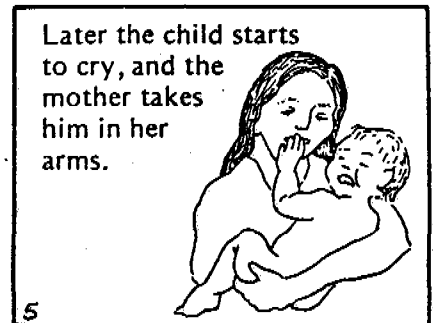
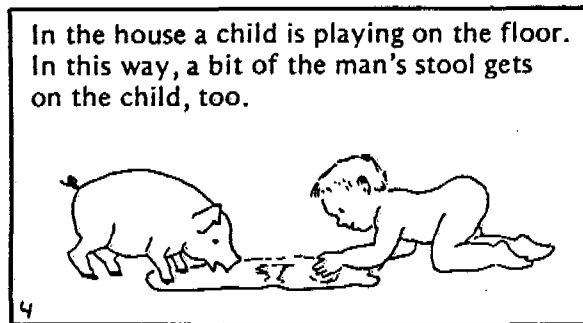
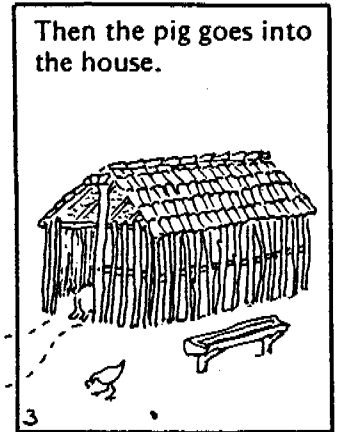
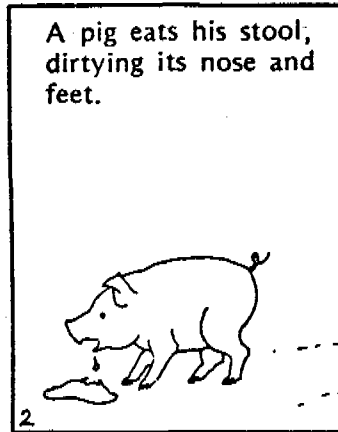
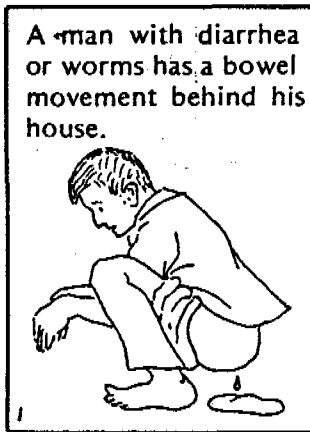
Unsafe water will be much safer to drink when we store the water for at least 24 hours. Within that time many harmful organisms will die (as they cannot survive in water for a long time) and most of dirt will sink to the bottom of the pot.



Water improvement by storage can simply be done in the home by using three pots. Two big pots are used for fetching water on alternate days. The first pot is allowed to stand for 24 hours. Then the clear top water is carefully poured into another (smaller) pot for drinking. The remaining water can be used for washing. When the first pot is empty it is cleaned and refilled. Then it is allowed to stand for 24 hours again. Meanwhile the second big pot is used in same way as the first. In this way each day's drinking water has been standing for at least 24 hours before it is used.

Note: promote this method only when people have at least three pots (or have the money to buy them).

Human beings and animals might spread diarrhoeas and worm infections when faeces are left in the open. For example:



2.2. SAFE EXCRETA DISPOSAL

Safe excreta disposal is at least as important as a safe water supply to prevent disease transmission. That is why more and more water supply projects include new facilities for excreta disposal in their programmes. Whether included or not, in both cases it is important to discuss with the people in the community present defecation practices and possible improvements, if necessary.

To discuss possible improvements in defecation practices is often far from easy. In many societies defecation is a very sensitive topic. People do not like to talk about it. And even minor changes in defecation practices may be difficult to achieve. Also the low priority people sometimes give to new sanitation facilities compared to other needs may be a handicap in the adoption of sanitation improvements.

The new water supply project may offer a good opportunity to stimulate discussion on existing practices in excreta disposal, the role of faeces in disease transmission and feasible solutions to reduce health risks.

2.2. Safe places for excreta disposal

A safe place to pass stools is a place where the faeces cannot cause infection. A clean latrine is such a place. But as we do not find latrines everywhere first general aspects of safe places (including latrines) will be given. The general point that is important to discuss in the community is not that everybody should have a latrine, but that faeces should not be left at places where it can give rise to infection.

Excreta disposal is most likely safe when the following conditions are all fulfilled:

- a. where faeces are not exposed to other people or domestic animals;
- b. where faeces are not exposed to flies;
- c. where faeces are not moved or used as manure on the field before they have become harmless;
- d. where faeces cannot be washed into water supply sources;
- e. where faeces cannot drain through the soil into water supply sources;
- f. where urine does not get into water in areas where urinary schistosomiasis is a health problem.

a. Where faeces are not exposed to other people or domestic animals

When there is no latrine, health risks can be reduced by passing stools at places where people or animals do not

walk frequently. Otherwise faeces will easily get on feet and be spread all over the place. And this will increase the risk of disease transmission, especially for playing children.

For the same reason it is also important to cover or bury faeces by digging a small hole before passing stools. However, this will not prevent the risk of hookworm infection. Hookworms will come out of the earth even from 60 cm depth. Hookworm transmission may be reduced by furrowing defecation sites. These are sites where people walk on mounds and defaecate in the furrows. Only in dry, hot areas it might be better to expose the faeces to full sunlight as the drying heat of the sun will kill the disease organisms.

In some areas faeces are left in the open so that pigs can eat them. This practice may create a health problem if the pigs bring dirt and excreta back to the houses. When possible improvements are being discussed with the people in the community, alternative sources of nutrition for pigs should be considered.

In some areas people defecate into water, e.g. fish ponds or rivers. Where schistosomiasis is not a health problem this does not create health risks provided the water is not used for domestic uses (see for details page 43) and when there is no contact between this water and water supply sources. There is perhaps less danger too when water is taken very far downstream from a settlement where people defecate into a river as fast-flowing rivers eventually clean up the germs of the faeces. However in populated areas this should not be relied upon. Just downstream from the settlement the water will be very unsafe so in that case water should only be taken upstream.

and b. Where faeces are not exposed to flies

Excreta disposal is safer when flies cannot come into contact with faeces. Flies use faeces as a breeding place. To prevent contact between faeces and flies, the faeces on the ground could be covered. If a latrine is used a hole cover could be used to prevent flies getting in and out of the hole. (See also page 36.)

Also anal cleansing material (like paper, maize cobs, leaves, sticks, or stones) should be properly disposed of in order not to attract flies. Such material may be buried, covered or burned, or thrown away in the latrine if of a suitable type.

If a latrine is used and the cleansing material cannot be thrown away in the latrine itself, it may be put temporarily in a bucket with a cover and then regularly burned or buried. When not done safely, this may include health risks.

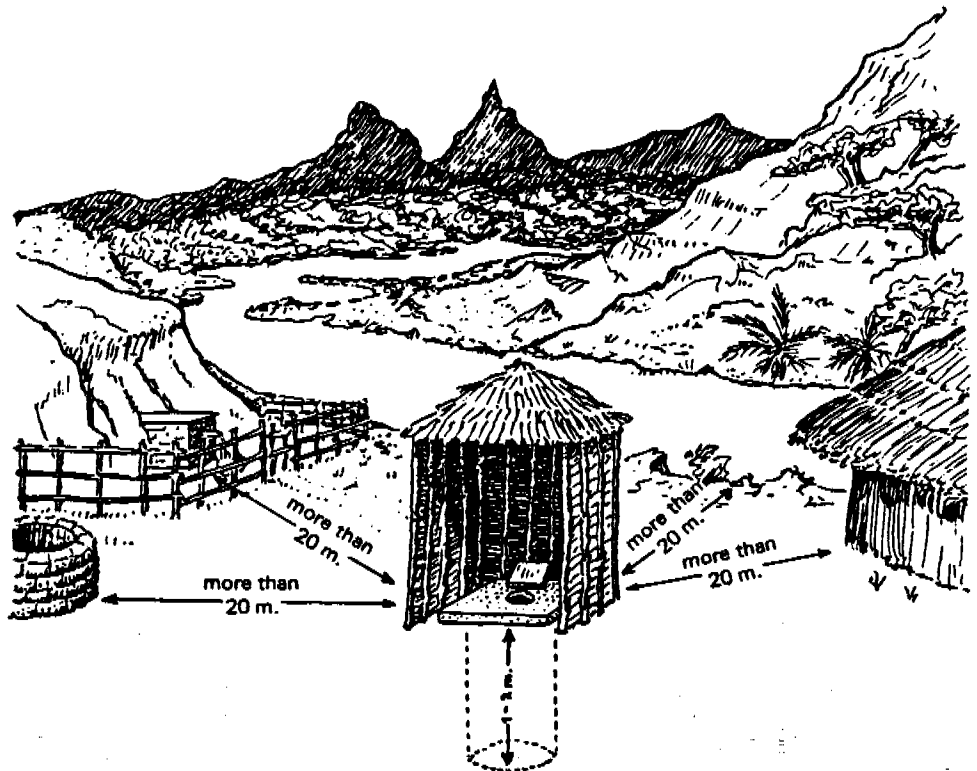
and c. Where faeces are not moved before they have become harmless

Excreta disposal is safer when faeces are not moved or used as manure on the field before they have become harmless. To become harmless faeces have to decompose in compost latrines. Dependent on the type of compost latrine it takes from a few months to over one year before the faeces have become harmless.

In some areas people use bucket latrines. These buckets are emptied by hand and the faeces taken to another site for disposal (e.g. agricultural field, fish pond, refuse heaps, treatment site). As this system is a source for infection, other solutions should be discussed (including other jobs for the persons who earn their living by emptying bucket latrines.)

and d. Where faeces cannot be washed into water supply sources

Excreta disposal is safer when the faeces cannot be washed away by rains or floods to water supply sources. The risk that water will become contaminated is very likely when faeces are left on the ground or only lightly covered, especially near water sources. (See also page 51).



To be safe, a latrine should be at least 20 meters from all houses, wells, springs, rivers, or streams. If it is anywhere near where people go for water, be sure to put the latrine downstream. (See next page)

and e. Where faeces cannot drain into water supply sources.

Excreta disposal is safer when faeces cannot drain through the soil into water sources. This means that latrines should never be built within 20 metres (or 50 paces) of a well or other water supply source (see drawing page 35). Also the latrines should not be located uphill from the water source. In areas where floods are likely to happen, raised latrines may provide the most suitable solution.

and f. Where urine does not get into the water

In areas where urinary schistosomiasis is found, it is very important not to urinate in or near water.

2.2.2. Latrines

Safe latrines

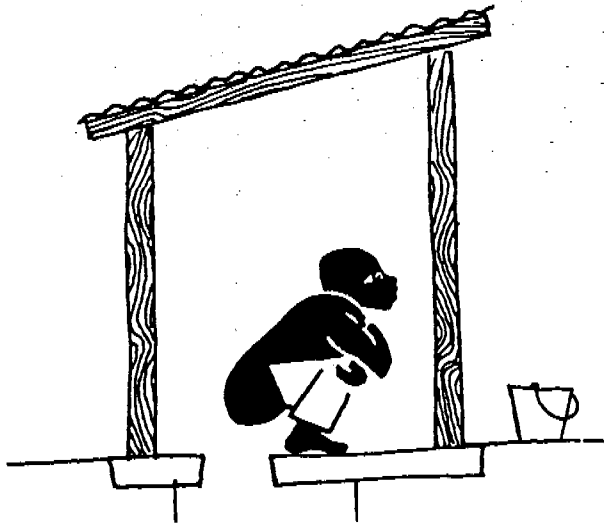
A latrine is a safe place to pass stools and urine, but only when the latrine is properly constructed, well maintained, cleaned every day, and without flies. Otherwise the latrine will increase the risk of disease transmission instead of reducing it.

Some latrines are more safe than others. A pit latrine with a concrete slab and a long-handled cover is a safe example: a concrete slab is easy to clean, cleansing materials can be thrown into the pit, and the cover will prevent flies getting in and out the pit. A ventilated improved pit latrine (VIP latrine) has the advantage that a bad smell is prevented and fly breeding is effectively controlled. The VIP latrine is more expensive than a pit latrine, but not necessarily more safe.

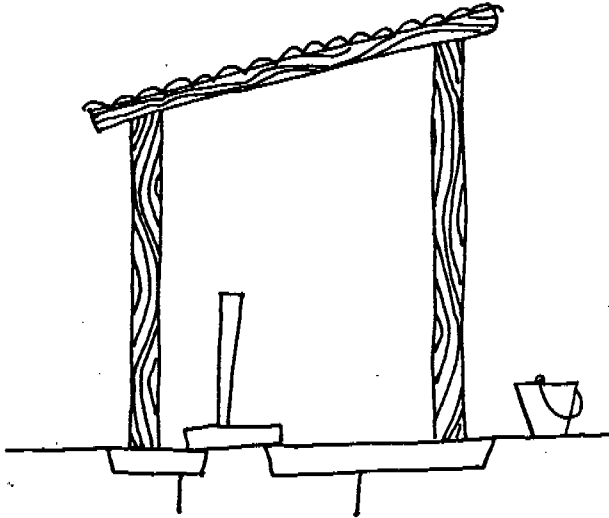
Cleaning and maintenance of household latrines generally cause less problems than the cleaning and maintenance of communal or public latrines. Communal and public latrines may more likely be cleaned regularly when a special person is appointed (and paid) to do the work. Self-help cleaning of communal and public latrines does not seem to be a suitable solution. It mostly results in poor hygiene.

A dirty latrine is not only a health risk, but people also will not like to use such an unclean facility. When a latrine is dirty people may prefer to pass stools somewhere else and so create new risks of disease transmission.

Special attention may be given to the use and cleaning of school latrines. For many children the school latrine is their first experience with latrine use. In consultation with the schoolteacher the children may be instructed and encouraged to use the latrine properly and to keep the place clean.



A latrine is a safe place to pass stools and urine, but only when it is properly used...



... and without flies ...



... and regularly cleaned.

Construction of new latrines

When the community wants to build new sanitation facilities it is very important to discuss in detail the various possibilities in relation to existing practices in the community. New facilities will more likely be used when they fit local circumstances and meet local preferences.

Important considerations are:

- Who may share a latrine with whom?
- What type of latrine is preferred and is it affordable?
- What is a suitable site?
- Is it easy to go there, also for children and at night?
- What is the preferred defecation posture, sitting or squatting?
- Can the preferred cleansing material be used?
- Is privacy preferred?
- Will the latrine and its site be in line with local values, beliefs, rites and taboos?

When the construction of latrines is promoted in a sanitation programme it is very important to raise the interest of the people by discussing the present situation together with the health risks involved and by stimulating the people to think of what difference the use of a new latrine may make for the health situation in the community. Without strong community support a new sanitation programme is likely to fail.

Apart from community involvement sound technical advice is also needed for proper design and construction of the new facilities and for maintenance and repair work.

2.2.3. Handwashing after defecation

Handwashing after defecation will greatly help to reduce the risk of disease transmission. (See also page 12.) Hands should be washed preferably with soap. But when soap is in short supply or too expensive other solutions could be discussed and promoted. (e.g. the use of clean sand, ash, etc.)

In areas where anal cleansing with water is practiced the promotion of handwashing may create less problems than in areas where other cleansing materials are used. When anal cleansing is done with water it means that at least some water is available and that handwashing may be integrated more easily as a part of the defecation practice.

2.2.4. Safe excreta disposal for babies and young children

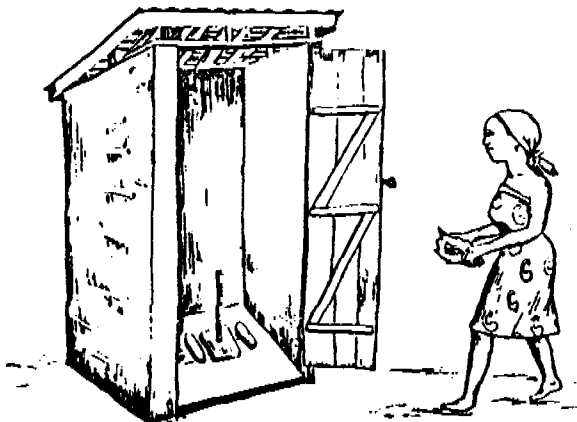
A common belief in many societies is that the faeces of babies and little children are less harmful than those of adults. But in fact faeces of babies and young children

are at least as dangerous as those of adults. Therefore it is important also to dispose of these faeces in a safe way. Present practices and possible improvements could be discussed, like:

- dispose of faeces in a safe place (latrine or burying);
- wash babies and young children after defecation;
- wash hands after handling baby's faeces;
- wash soiled clothes at places where it cannot cause contamination.

For young children (too small or too scared of the squat-hole to use the latrine) a hole in the ground near the house may be made to use for defecation. Each time the faeces will have to be covered with soil. Another hole can be made when the first one is full.

This practice will reduce the risk of disease transmission except for hookworm infection. That is why the construction of a separate child's latrine may be a better solution. Of course these young children should also be taught to wash their hands after defecation.



*... safe disposal of
babies' faeces: an example...*

2.3. PERSONAL AND DOMESTIC HYGIENE

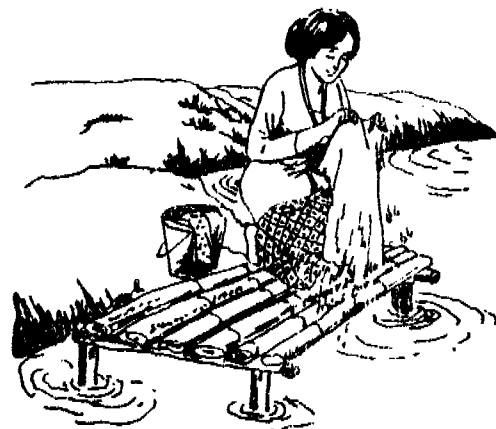
2.3.1. Personal hygiene

Personal hygiene is especially important to reduce and prevent diarrhoeas, skin and eye infections and louse-borne infections. The best way to facilitate personal hygiene is to have plenty of water near people's homes, and to use the water for:

- handwashing after defecation (see also page 38);
- handwashing before preparing food and eating (see also page 43);
- frequent washing of the face and hands of little children, the hands preferably several times a day;
- frequent bathing or body-washing. Babies and young children, whenever possible, should be bathed every day since they are constantly soiling themselves or getting dirty at play;
- regular washing of hair;
- cleaning of fingernails whenever they are dirty. This will be easier when the fingernails are cut short;
- washing of clothes and bedclothes (laundry).

Although it is useful to hang clothes out in the air and sun, they can only be kept clean by regular washing. If possible let clothes dry in the sun as this will kill most of the remaining disease organisms.

- cleaning of teeth.



Whenever possible bathing and washing should be done with soap. But just using lots of water to clean the body or clothes is also effective. Or, in case of bathing, substitutes for soap could be used such as clean sand, a flat stone or a clean cloth to rub the body.

The new standposts can greatly help to improve personal hygiene as the piped system brings the water near people's homes. But then the water has to be used not only for drinking and cooking but also for bathing and laundry. The community could be stimulated to decide to construct and use special facilities for bathing and laundry at some distance from the drinking water tap to prevent contamination of drinking water (see also page 28). Also these facilities require a soakaway for waste water and regular cleansing. The users of the facilities

could be stimulated to organise proper use and maintenance of these facilities.

Where schistosomiasis is a health problem it is especially important that the new standposts provide plenty of water to discourage the use of traditional bathing and laundry places (see also page 57).

For the prevention of other diseases, the frequent use of water is more important than the quality of the water. In this context the use of traditional sources does not give rise to serious health risks provided the water does not get into the mouth (for or example in cleaning of the mouth, swimming, etc.).

As skin and eye infections and louse-borne infections are transmitted by close contact it will also help to reduce these infections when:

- clean clothes are put on after bathing as one cannot have a clean body with unclean clothes;
- all family members regularly bathe and wear clean clothes;
- face towels are not used by more than one person (to prevent trachoma, see page 59).

For some groups of people the above mentioned preventive measures may give rise to serious problems. For example some people are not allowed to bathe on certain occasions or at certain times. Or some people may not be able to wash clothes regularly as they do not have time to do so; or they are afraid their clothes will wear out too soon; or they do not have clothes to change. These problems require serious consideration.

2.3.2. Domestic hygiene

Some measures to improve domestic hygiene have already been discussed in other sections. One of these measures is the cleaning of water containers, dippers and cups to prevent contamination of drinking water. We also discussed covering water containers. (See page 29.)

Other measures that could be discussed with the community in order to reduce the risk of disease transmission are to:

- keep kitchens clean;
- keep floors of houses and the areas around the houses (especially where children play) clean by frequent sweeping. Also animal droppings should be swept away regularly (to prevent flies);
- wash cooking pots, dishes, eating utensils, artificial teats, etc., carefully after each use. A rack in the sun and above a soakaway may be the best place to drain and dry washed articles.

... washing dishes, pots, ...



The water from washing can be emptied into the soakaway (or it can be used to water plants);

- control flies not only by covering faeces and pit latrines but also by food protection and safe disposal of domestic waste;
- dispose of domestic waste in a safe way. Waste should be covered, buried or burnt to prevent flies and rats. One way to store domestic waste is to put it temporarily in a waste bin. Always cover the bin after use. It will not only prevent flies and rats, but also a bad smell. When the bins are not emptied by waste collectors the waste may be buried or burnt every now and then (e.g. every half week).

Another way to dispose of domestic waste is to dig a big hole to put the waste in and to cover it immediately with some earth. A separate hole may be dug to compost waste like tea leaves, banana skins, and so on for future agricultural use. This waste also should always be covered immediately. Burying or covering waste such as tins that may collect rain water will prevent mosquito breeding. (See also page 61.)



... safe disposal
of waste



2.4. SAFE HANDLING OF FOOD

Safe handling of food can further help to reduce the risk of disease transmission of diarrhoeas and worm infections. Food is handled in a safe way when:

- hands are properly washed with safe water before eating or preparing food and not allowed to get dirty again during these activities. So hand washing is not only important after defecation, but also before handling food. Eating with unclean hands can easily cause infection. Also food prepared or served by somebody with unclean hands may infect everyone who eats this food.



- raw foods and fruits are washed with safe water before eating. This is important as raw food and fruits may have been in contact with soil contaminated with human waste or manure (fruit fallen on the ground or vegetables grown low); or they may have been handled with unclean hands; or they may have been sprinkled with unsafe water to keep them fresh before selling. (Washing of raw food and fruits will also help to get rid of the harmful remains of agricultural chemicals.) As an alternative to washing, fruit may be peeled.



- hands and utensils are washed after handling raw meat and fish.

- food is properly cooked before eating. Cooking will kill disease organisms and worm eggs. This is not only true for vegetables but also for pork, beef and fish. Leftovers that cool down and are kept for a following meal should be thoroughly heated before eating to be sure that no new disease organisms are present in the food. This is the more important for weaning babies and very small children. If possible they should get freshly prepared food for every meal.
- cooking and eating implements are washed carefully (See also page 41.) This is important as clean food served in an unclean dish can become contaminated food the moment it touches the dish.
- all food is stored in washed, covered containers to protect it from flies and dust.

Safe handling of food will be made easier when there is plenty of water available at the house for washing of hands, food, dishes, etc. as well as for cleaning of the kitchen. When the standposts provide water closer to the homes it is a good opportunity to promote the use of more and safe water for these purposes.

2.4.1. The feeding of babies and young children

Breast feeding is not only healthy, it will also greatly reduce the risk of diarrhoea as the baby does not get unclean things in its mouth. For safety's sake a mother who is breastfeeding can wash her nipples and the mouth of her child before feeding. If a mother does not breast feed, than it is safer to use a clean cup (and spoon) - and not a bottle - to feed the baby. Bottle-fed babies are more likely to get diarrhoea as bottles often fall on the floor or are left around unprotected from flies and unclean hands. So the clean cup/spoon feeding method should be discussed and encouraged when breast feeding is not practised.



The 'clean cup and spoon feeding' method could be discussed and promoted when breastfeeding is not practiced.

Young children between the ages of about six months to two years are especially at risk to fall ill with diarrhoea. This is because they have not yet built up a resistance to diarrhoea at the time they get new foods and because they like to put all kind of things in their mouths. That is why it is especially important to discuss with the people in the community possible ways to protect little children from diarrhoea. (See also page 44). Of course diarrhoea cannot be prevented altogether, but we can try to keep it to a minimum. A child with diarrhoea will need special care to prevent it from losing too much body water in the stools (dehydration). For treatment of dehydration caused by diarrhoea, see Annex A.

2.5. SAFE WASTE WATER DISPOSAL/DRAINAGE

Still water and muddy places around houses and water collection sites will cause health risks (especially hook-worm infections) and attract mosquitoes. That is why safe waste-water disposal from taps and domestic uses is very important. On page 28 it was discussed to clean the drains from the standposts regularly so that waste water can always run away. It was also suggested that domestic waste water might be thrown away in a soakaway (see page 41). How to prevent still water around our houses is discussed on page 61.

Especially in dry areas it may be discussed to use domestic waste water for other purposes, such as to water vegetables, fruit trees or domestic animals, to clean the latrine, etc.

The community could also be stimulated to think of productive uses of waste water from the standposts. The water may for instance be used to grow vegetables or fruits. The profits may be used for little children or to finance the maintenance of the water supply system. Or the caretaker may use the water for her/his vegetable plot. Another possibility is a seedbed for fruit-, timber-, and/or firewood trees at the end of the drain. When the young trees are mature enough, they could be planted in the people's gardens or a village or school plantation. The water may also be used to make bricks and clay tiles for a community building project or for other purposes.

So to benefit as much as possible from an improved water supply, the community may use the waste water for productive uses. However, in promoting a productive use of the water, we should take care that a minority of the users does not profit at the cost of other people. Care must be taken too that the productive use of wastewater does not increase the amount of water allowed to run to waste by users.

3. WATER AND SANITATION RELATED DISEASES

In this chapter a short description is given of the main water and sanitation related diseases and the ways they are transmitted from one person to another. Most of these diseases are curable although this is beyond the scope of these guidelines. Instead we concentrate on how they are passed from person to person, to give you ideas for how these routes can be interrupted. The following sub-division is made:

- 3.1. diarrhoeas;
- 3.2. worm infections;
- 3.3. skin and eye-infections and louse-borne infections;
- 3.4. mosquito- and fly-borne infections.

An overall picture of the diseases that will be discussed on the following pages is given in Table 2. The blank space can be used to write down the local names for these diseases.

Table 2: Water and sanitation related diseases.

Group of diseases	Infections/English names	Infections/Local names
Diarrhoeas	Cholera Dysentery Unspecified diarrhoeas	
Worm infections	Roundworm (ascariasis) Whipworm (trichuriasis) Pinworm (enterobiasis) Hookworm Guinea worm (dracunculiasis) Schistosomiasis (bilharzia)	
Skin and Eye infections, louse-borne infections	Scabies Ringworm (fungus infection) Yaws Trachoma Louse-borne Typhus and Louse-borne relapsing fever	
Mosquito- and fly-borne infections	Malaria Yellow fever and dengue Filariasis (elephantiasis) Sleeping sickness (trypanosomiasis) River blindness (onchocerciasis)	

3.1 DIARRHOEAS

Diarrhoea is the frequent passing of watery stools. There are many different diarrhoeal diseases like cholera, dysentery, and acute or unspecified diarrhoeas.

Cholera

A person with cholera passes very frequent stools. These stools look like almost clear water. The diarrhoea is usually followed by vomiting. Cholera often comes in epidemics (infecting many people within a short period of time).

Dysentery

A person with dysentery passes watery stools with blood in them. Other symptoms are fever, vomiting and stomach pains.



Unspecified diarrhoeas

A person with unspecified or acute diarrhoea passes more than five watery stools in 24 hours. Often there are also other symptoms like fever and vomiting.

All these diarrhoeal diseases have in common that the organisms that cause the disease are excreted in the stools of infected persons. In fact diarrhoea can be seen as a normal body reaction to get rid of the harmful disease.

People are infected with diarrhoeal diseases through the mouth. So the transmission of diarrhoeal diseases is from faeces to mouth. This is why these diseases are called 'faecal-oral diseases' (oral means mouth).

Tiny bits of faeces can carry enough disease organisms to cause infection with diarrhoea. These organisms - germs - are responsible for the disease. The germs are so small that they cannot be seen with the naked eye. They enter the stomach and intestines through the mouth.

In the intestines the germs multiply very fast, and within a short period of time an infected person can get ill with diarrhoea.

But not everyone gets ill after infection. Sometimes people are infected without any sign of illness. These people are so called 'carriers' as they carry the disease organisms in

their body without getting ill. Nevertheless these disease organisms also multiply and are excreted in the stools and may infect other people who can get very ill. So the faeces of all infected people are dangerous. And as it is impossible to know who is infected and who is not it is necessary to dispose of all faeces in a safe way.

Diarrhoeal diseases are common all over the world. People of all ages can get diarrhoea. But babies and children get it more often (see also page 44). Also babies and children are often more heavily infected than adults. Diarrhoea can be very dangerous, especially for people who are poorly nourished. Death from diarrhoea is a serious possibility.

Death from diarrhoea is often caused by the loss of too much bodily water in the stools (dehydration). Therefore it is very important to replace this water as soon as possible. Annex A provides a description of a home made solution to treat dehydration.

3.1.1. Routes of disease transmission

There are many ways in which the germs from faeces can reach the mouth. It mostly happens through faecal contamination of fingers, food and water. This is when the germs from the faeces are carried by fingers, food or water into the mouth.

Fingers become unclean with the germs from the faeces when hands are not washed after passing stools or after handling the faeces of babies. If these unclean fingers are put into the mouth, the germs will enter the body. Children are especially at risk here, because they put their fingers into their mouth very readily.

faeces → fingers → mouth

Food is contaminated with faeces when it is handled with unclean fingers. This will happen when people prepare food with unclean fingers. The same will happen when people eat their food with unclean fingers. The eating of this contaminated food will cause the germs enter the body.

faeces → fingers → food → mouth



Stories to illustrate routes of disease transmission
some examples.*

Story 1

A man who has diarrhoea defecates near a house. A woman later passes this spot. She does not see the faeces. She steps on the faeces and carries it on her feet into her house. Her child plays on the floor. He gets some of the diarrhoea germs on his hands by touching his mother's foot or by touching a bit of faeces that has rubbed off her feet onto the floor. The child puts his hands into his mouth and infects himself with diarrhoea.

Story 2

A farmer defecates and forgets to wash his hands. He picks some fruit and vegetables and the diarrhoea germs get on the food. A woman buys some of the food and brings it to her home. She prepares a meal without properly washing or cooking the food. The family eats the infected food and everyone in the family becomes ill with diarrhoea.

Story 3

A little child defecates in the courtyard. A chicken gets the infected faeces on its feet. Then the chicken walks into the kitchen and jumps on the edge of an uncovered container of drinking water. The mother pours the water into a glass. She drinks the water and gets ill with diarrhoea.

Note: Use local names and local situations for stories. This will make the stories more realistic. (See also page 69.)

* Adapted from: 'Training manual in elementary hygiene/sanitation and its introduction' by Christine Ansell and Robert Burrowes.

Food can also be contaminated by flies. Flies often carry faecal material because they may begin a meal with faeces and finish it with food for humans. In this way the flies transfer the germs of the faeces to the food. When people eat this food, the germs will enter the body.

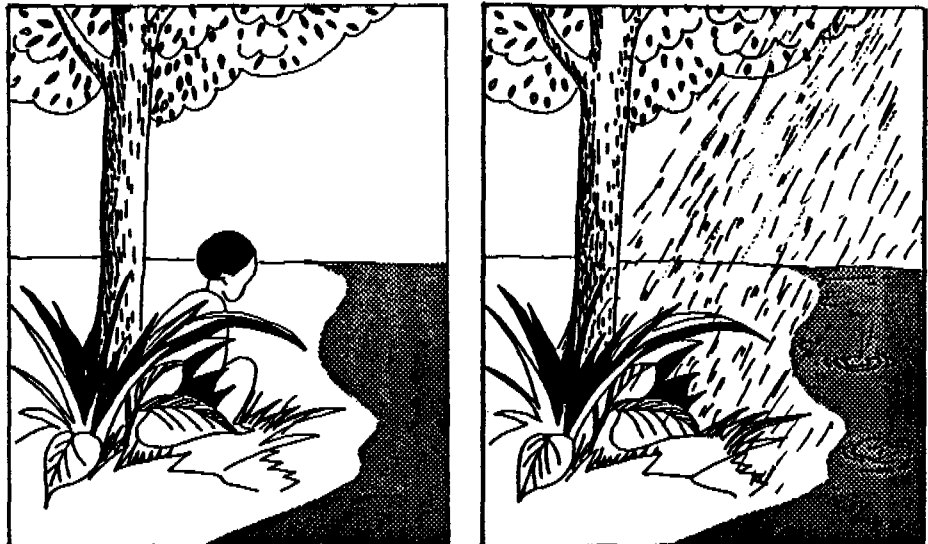
faeces → flies → food → mouth

Unclean fingers and flies can contaminate cups and eating utensils like spoons. When people eat with or drink from these unclean utensils, the germs will enter the body.

faeces → fingers/flies → utensils → mouth

Water is contaminated with faeces after defecation into or near the water. This water can look very clean, although it is contaminated with the germs from the faeces. If people drink this water, the germs will enter the body.

faeces → water → mouth



When people defecate on the soil and it starts raining, the faeces will drain into nearby water sources. Or if a latrine has been built too close to a water source (say within 20 metres) the faeces may also seep through the soil into a well or other water source. By drinking this contaminated water the germs will enter the body.

faeces → soil → water → mouth

Sometimes fresh faeces are used as manure on crops. When these crops are eaten without careful washing or cooking, the germs of the faeces will enter the body.

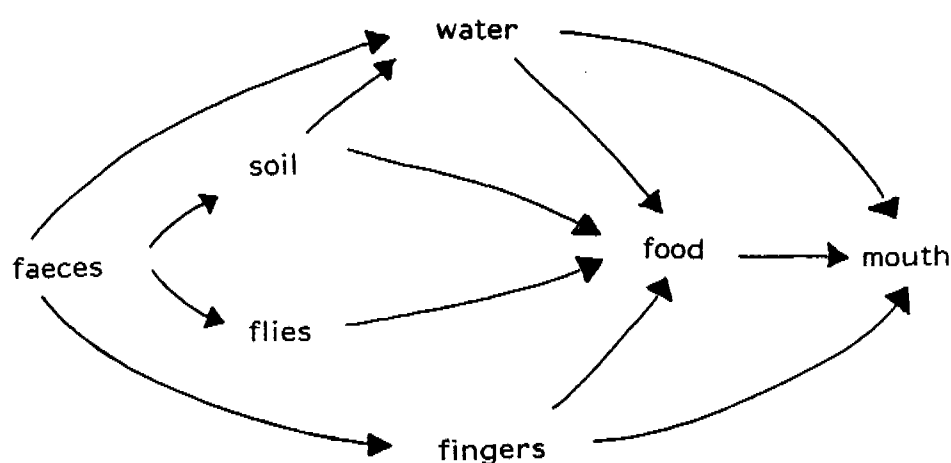
faeces → soil → food → mouth

Children playing can get contaminated soil on their fingers or toys. If they put these fingers or toys into their mouth, the germs will enter their bodies.

faeces → soil → fingers → mouth

So there are many ways in which the germs of the faeces can reach the mouth. The following scheme puts the most important ones together.

Scheme 1: Faecal-oral routes of transmission:



The number of cases of diarrhoea is often not the same over the year. In some areas diarrhoeal diseases occur more often in the dry season. This is due to a lack of water for washing hands, food, eating utensils etc. This shows that not only the quality but also the quantity of water is very important in the prevention of diarrhoeal diseases.

In some areas many people suffer from diarrhoea at the beginning of the rainy season. This is the time that the faeces drain into the water sources and contaminate the water. Drinking this unsafe water is then the main cause of the diarrhoeas.

Sometimes many cases of diarrhoeal diseases occur during harvest time. During this time many people work in the field and defecate there. Contamination is then very likely.

3.1.2. Helping to prevent diarrhoeas

To help prevent diarrhoeal diseases it is important to try to stop the germs in the faeces from reaching the mouth. Therefore it is necessary to:

- use safe water for drinking, handwashing, washing of raw vegetables and fruit and for cleaning of cups and eating utensils (see page 26);
- dispose of faeces in a safe way (see page 33);
- wash hands after defecating and before preparing and/or eating food (see page 38 and 43);
- wash raw vegetables and fruit carefully before eating, or peel fruit (see page 43);
- cook meals properly (see page 43);
- protect food from flies (see page 44).

But even with all possible measures it will be impossible to prevent diarrhoea altogether. Partly this is due to the fact that there are so many transmission routes from faeces to mouth. Another reason is that diarrhoea can be a symptom of a non-diarrhoeal disease, e.g. malaria, measles and ear diseases. As these diseases do not follow the faecal-oral transmission route, the preventive measures as discussed above will not help in these cases. But every reduction in the frequency of diarrhoea, particularly in children, is worthwhile and the above measures can do a great deal to help.

3.2. WORM INFECTIONS

Very many people suffer from one or more worm infections. All worm infections - except guinea worm and urinary schistosomiasis - have in common that the eggs of the worms are passed in the faeces of the infected persons.

Mild worm infections are usually without serious symptoms (except guinea worm). Sometimes there are no symptoms at all. But the faeces of people with a mild infection might be as dangerous as the faeces of people with a serious infection. That is why safe disposal of all faeces and personal hygiene are very important in the prevention of this group of infections.

Not all worm infections have the same routes of transmission. The most important routes of transmission can be illustrated by referring to the more common worm infections.

3.2.1. Roundworm, whipworm, pinworm and hookworm

Roundworm (ascariasis)

Roundworms have a round shape and are about as long as a man's foot. The worms live in a person's intestines and feed on the food eaten by the person. So when a person has a lot of worms they will feel weak, because the worms use a part of their food. Another danger is that the worms may by their presence block the intestines and cause difficulties in defecating.

The eggs of the worms are excreted in the stools. To become infected the eggs have to enter the body through the mouth. So roundworm follows the faecal-oral route of transmission, just like diarrhoea (see page 48). For roundworm two routes of transmission are especially important.

The first one is unclean fingers. This is why children are more frequently infected than adults. Children put their fingers and all kinds of other things in their mouth. The second route is raw vegetables and fruit. Raw vegetables and fruit may get contaminated with eggs when people with roundworm defecate in a field where vegetables or fruit are growing. Then the eggs will get on the vegetables or fruit on the ground. Contamination with roundworm eggs can also happen when a vegetable field has been manured with fresh human faeces.

Whipworm (trichuriasis)

Whipworms are thin like tread. These worms show the same characteristics as roundworms and infection also occurs in a similar way. However infection by eating

contaminated raw vegetables or fruit is much less important than in the case of roundworm, because the eggs are killed more easily by drying or direct sunlight.

Pinworm (enterobiasis)

Pinworms are very small and thin. The worms live in a person's intestines. They come out of the anus at night and lay eggs at the anus opening. The eggs are excreted in the stools. Pinworms cause severe itching of the anus. The person will scratch and so the eggs get on the fingers. Pinworms spread often on unclean fingers.

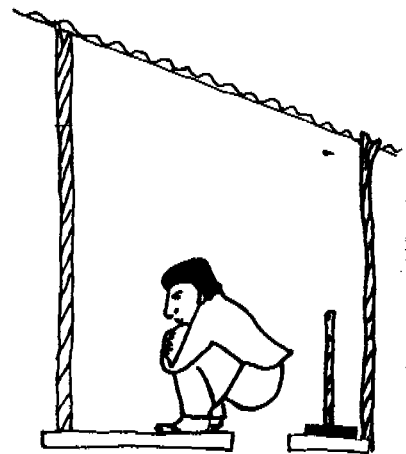
Hookworm

Hookworms are small and red in colour. The worms live in a person's intestines and feed on his blood by making small wounds in the wall of the intestines. When there are many worms sucking blood, the person will feel weak and tired. Hookworm eggs are excreted in the stools. On (or in) the ground these eggs will develop into worms. The worms get into the skin of the feet when people with bare feet walk on contaminated ground. So, hookworm infection can be prevented when people wear shoes, or when people do not walk with bare feet in places where people sometimes defecate.

Helping to prevent roundworm, whipworm, pinworm and hookworm

All these worm infections of the intestines can be greatly reduced by safe excreta disposal. The best place to defecate is a latrine. But then we have to take care that the latrine is kept clean as a dirty latrine can easily increase the risk of worm infections instead of reducing it. This is especially true for the transmission of hookworm. (See also page 33). Other important preventive measures are the washing of hands after defecating and before

handling food, and the washing of raw vegetables and fruit. Faeces that will be used as manure on the field should first be allowed to become harmless. Composting for 6 to 12 months will kill the eggs so after that time the composted faeces can safely be used.



3.2.2. Guinea worm and schistosomiasis

Guinea worm (dracunculiasis)

The guinea worm lives in a person's leg. There it causes a wound which often makes walking difficult. When this person wades into the water the larvae of the worm pass into the water. There the larvae infect cyclops (tiny little shellfish that barely can be seen with the naked eye). When another person drinks this water contaminated with the infected cyclops, the larvae will be swallowed. Inside the body the larvae will develop into new worms in the legs of the infected person.

Because of this transmission route, guinea worm infections are very common in areas where people get their drinking water from unprotected shallow ponds or step wells.



Helping to prevent guinea worm

It is easy to help prevent guinea worm infections. When we only drink safe water from a public standpost we cannot become infected with guinea worm. If we have to use drinking water from infected pools, ponds or wells we can filter the water through a cloth to retain the tiny shellfish and so prevent guinea worm infections.

Schistosomiasis (bilharzia)

Schistosome worms live in a person's blood system. The eggs are excreted in faeces or urine depending on the type of schistosomiasis. A person with schistosomiasis complains of pain in the belly and of passing blood with urine or faeces.

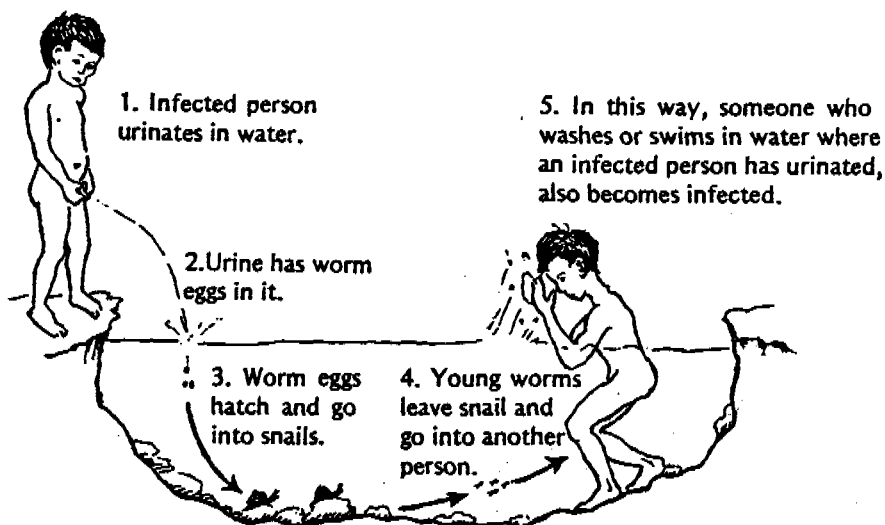
The route of transmission of schistosomiasis is rather complicated. When people who have schistosomiasis urinate or pass stools in or near water, the eggs of the worms will get into the water. In the water the eggs have to enter a snail to become young worms. The young worms leave the snails and enter people who are in the water through the skin. So people get infected with schistosomiasis when they bathe, wash clothes, work, walk, fish or play in contaminated water. To a lesser extent people can get infected when they drink this water.

Helping to prevent schistosomiasis

Control and prevention of schistosomiasis is difficult. Measures for control can concentrate on:

- a. prevention of water contamination.
Safe disposal of all faeces and/or urine by all people in the community will prevent contamination of water and control infection.
Yet only one failure in safe disposal is enough for snails to produce young worms for a long period of time.
- b. avoidance of skin contact with contaminated water.
The new piped water supply may greatly help to reduce contact between a person and contaminated water and so reduce the transmission of schistosomiasis. But then the water from the standpost rather than the traditional source has to be used not only for drinking, but also for bathing and washing of clothes and bedclothes.
- Other methods to reduce contact with contaminated water are to:
- keep water (without snails) in a container for 48 hours. Within this period the worms will have died;
 - drain small ponds or fill them with earth and stones;
 - use logs to make bridges to cross small streams;
 - avoid water contact at crowded places as contamination is more likely there;
 - avoid still water with vegetation as the snails prefer it.
- c. snail control.
As snail control is difficult and beyond the scope of a local water and sanitation programme, this is not discussed here.

Transmission route of urinary schistosomiasis



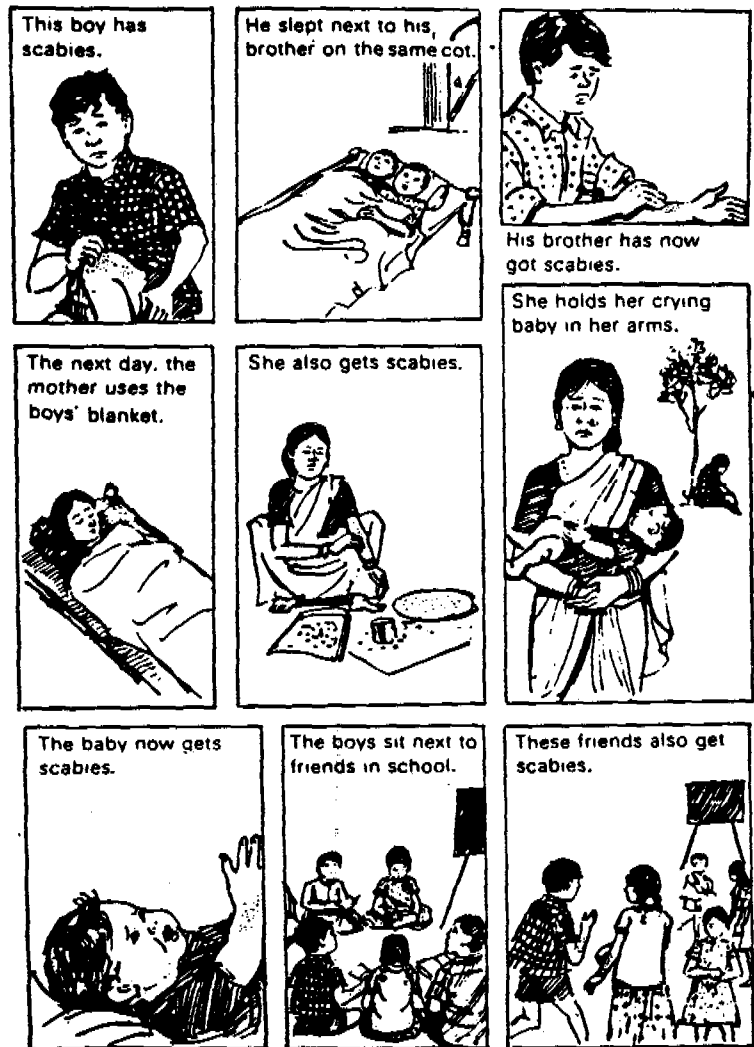
3.3. SKIN AND EYE INFECTIONS AND LOUSE-BORNE INFECTIONS

All diseases in this group have in common that they can be prevented by frequent bathing and washing of clothes and bedclothes. This will be illustrated by discussing some of the more important skin- and eye-infections and louse-borne infections.

3.3.1. Skin infections

Scabies

Scabies is a skin disease. It is caused by small mites just under the skin. Little marks will appear on the skin and the skin will itch, especially at night. This itching leads to scratching and consequently to other infections. Scabies spreads by touching the infected skin or by touching the clothes or bed clothes used by the person with scabies. Children often get this disease.



This picture story illustrates the transmission route of scabies.

Scabies can be prevented by regular bathing and washing of clothes and bed clothes. Mild cases of scabies can even be cured by hard washing (scrubbing) of the body twice a day.

Ringworm

Ringworm is a skin disease, but is not caused by a worm. It is called ringworm because this disease appears as small rings on the skin. Signs of this disease are most often found on the head (in the hair), on the feet (between the toes) and under the nails. The disease is spread in the same way as scabies. It also can be prevented or stopped in the same way as scabies.

Yaws

The first signs of yaws are small infections of the skin. Later it affects the bones. People of all ages can get it, but it affects children more frequently. Yaws is spread when a healthy person touches an infected person. It also can be spread by flies from one person to another. Yaws can be prevented by regular bathing and by keeping flies away.

3.3.2. Eye infections

Trachoma

Trachoma is a very common eye disease in dry, dusty areas. The disease starts with irritation of the eyes. After some time the disease will appear under the upper eyelids which become thick. Trachoma can lead to blindness. It spreads when the discharge (fluid) from the eyes of an infected person comes into contact with another person. This can happen when a fly carries the disease to the eye of another person. It also can happen if people clean their face with a cloth (e.g. towel or handkerchief) which has been recently used by an infected person.



Trachoma can be prevented by washing the face every day with water and, if possible, soap. Another preventive measure is to keep flies away from the eyes.

Conjunctivitis

Conjunctivitis is another eye disease. It causes red, watery eyes, and thick eyelids. Transmission occurs in the same manner as trachoma and can be prevented in the same way.

3.3.3. Louse-borne infections

Lice cause irritating bites, itching and scratching. This may lead to other infections.

The head louse is common for school children and people with long hair. Normally head lice are more a nuisance than a health problem. The body lice live in clothing, especially underwear. Body lice are more common in cold areas where people are unable to wash or change clothes very often. Body lice can cause dangerous diseases like louse-borne typhus and relapsing fever.

Water and soap will help to destroy the lice and their eggs (called nits). So regular bathing and washing of clothes and bed clothes is very important in the prevention and control of lice. The heat of the sun can also kill lice and nits.

3.3.4. Helping to prevent skin and eye infections and louse-borne infections

These and other skin and eye infections and louse-borne infections are often caused by a lack of water for personal hygiene. That is why these infections are found more often in dry areas and in dry seasons, or where people have to go far to fetch water. For all these infections the amount of water available is more important than the quality of the water.

The best way to prevent or reduce these infections is to have plenty of water near people's homes. Thus the new standposts may greatly help to reduce these diseases.

But then the water has to be used not only for drinking and cooking, but also for bathing and clothes washing.

As all these infections are transmitted by close contact, it is important that all family members regular bathe and wear clean clothes. But it is especially important for children, as they get these diseases more easily.



Another preventive measure is the proper disposal of faeces and other waste in order to prevent fly breeding. This will reduce the risk that flies will carry infections from one person to another.

3.4. MOSQUITO- AND FLY-BORNE INFECTIONS

The diseases in this group are caused by the bites of mosquitoes or flies that breed in or near water. That is why these diseases also belong to the water related category.

The prevention of these diseases is beyond the scope of a new local water supply and sanitation programme. But in some cases the risk of infection might be reduced by reducing the breeding places of mosquitoes and flies near the houses and by being very careful not to create new breeding places around new standposts and latrines.



Malaria

Malaria is a dangerous infection of the blood. The disease causes fever and other symptoms, like headache, shivering and diarrhoea. People may die from it.

Malaria is transmitted from one person to another by mosquitoes. When a mosquito bites a person who has malaria, the mosquito sucks the diseased blood. When the same mosquito bites another person, it puts the malaria into that other person's blood. That person then has malaria.

Only female mosquitoes suck blood. They need the blood for their eggs which are put in still water. There the eggs develop into larvae and the larvae develop into new mosquitoes. This takes 5 to 12 days.

Control of malaria is very difficult. In dryer areas it may help to reduce the disease by removing breeding places around houses as mosquitoes like to bite near breeding places. To prevent mosquitoes from breeding around the houses people could take care to:

- put away tin cans, broken bottles, coconut shells and other things that can collect rain water;
- cut grass and plants around the house when it can hold water;
- cover water storage jars, rainwater tanks, tree holes, etc.;
- drain or fill in little ponds;
- empty all open vessels at least every four days (this is before eggs have developed into new mosquitoes).

It is also important to take care that new standposts and latrines do not become new breeding places because of standing water not properly drained away. (See also page 46).

Another measure to reduce transmission of the disease is to use mosquito nets (if affordable), especially to protect babies and little children at night.

Filariasis (elephantiasis)

Filariasis is also transmitted from one person to another by mosquitoes. When a mosquito bites, it puts many little larvae into the blood. These larvae develop into worms inside the body. Many bites over many years cause swellings of the legs (this is called elephantiasis), of the genitals, or of other parts of the body. Some of the types of mosquitoes that may cause filariasis like to breed in dirty water. That is why this disease is often found in areas with poor drainage and poor excreta disposal systems. Breeding in open or cracked septic tanks, flooded pit latrines and water drains is common. That is why safe excreta disposal and water drainage is extremely important in the control of this disease. The same preventive measures as described for malaria might also help to reduce transmission of filariasis.

Yellow fever and Dengue

Yellow fever and dengue are also transmitted by mosquitoes. These diseases, found in parts of Africa, especially in urban areas, are dangerous and cause fever and other symptoms. To help to reduce transmission the same preventive measures could be taken as described for malaria and filariasis.

River blindness and Sleeping sickness

River blindness and sleeping sickness are often discussed in relation to new water supply and sanitation programmes. But although these diseases are water related as the insects that transmit these diseases live and/or breed near water, they are not directly related to new water supply and sanitation facilities. Prevention is broadly beyond the scope of these guidelines.

Only in West and Central Africa may the transmission of sleeping sickness be reduced by a new water supply. In these parts of Africa the tsetse fly that transmits sleeping sickness from one person to another bites and breeds near open water. When the need to visit these places is reduced the transmission of this disease may be lessened. New water supplies like standposts can help to lessen the need to visit these places when they provide enough water for both families and cattle.

4. HYGIENE EDUCATION AND AUDIO-VISUAL AIDS

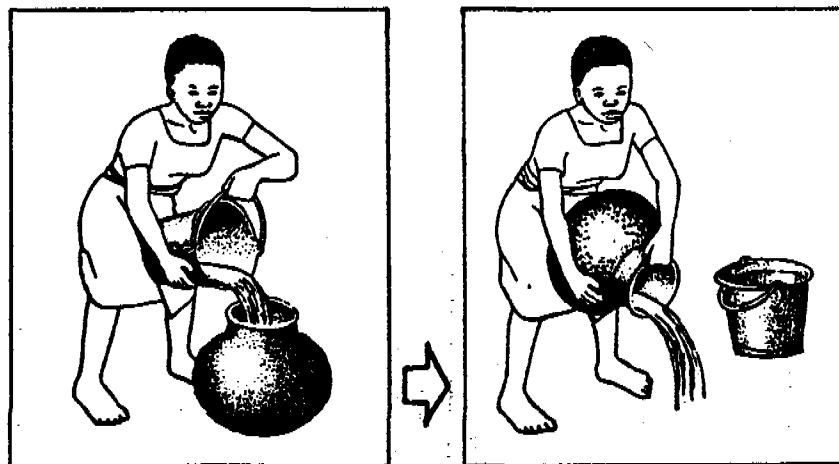
This chapter examines the possibilities and limitations of audio-visual aids in a hygiene education programme. The following sub-division is made:

- 4.1. Behavioural change and audio-visual aids;
- 4.2. The use of audio-visual aids;
- 4.3. Guidelines for the development of visual aids.

4.1. BEHAVIOURAL CHANGE AND AUDIO-VISUAL AIDS

Chapter 1 dealt with how to promote hygiene behaviour. It was discussed that hygiene education activities will more likely be successful when they are related to everyday life. That is why home visits, small group discussions and informal talks offer such good opportunities for successful hygiene education activities (see also page 23). Direct contact with the people in the community facilitates open discussions on present hygiene practices, problems and health risks. This contact makes it easier to discuss what may be proper improvements.

For the same reasons we put an emphasis on demonstrations (showing). For instance, it is often much better to demonstrate than to tell how to prevent contamination of water between collection and use. Or, when we want to discuss the health risks of different water collection sites, it will probably have more impact when we actually visit the different sites. Similarly, when we want to discuss the dangers of bottle feeding, it will help when we use a real bottle to demonstrate the dangers.



*Actual demonstration will have more impact:
An example.*

Also using local examples will do much to stimulate behavioural change. The following sentences serve as an illustration: "Yesterday I saw four children swimming in the water just nearby. Do you know about the risk of getting infected with schistosomiasis when they swim in this water?". This local observation could lead to a discussion of the health risks and how difficult it is to prevent children from playing in the water. Possible alternatives could be considered and promoted.

In addition to demonstrations and examples we can also use a variety of other aids, the so called audio-visual aids, like posters, flipcharts, flannel-boards, slides, films, stories, models, popular drama, and so on.

At the start of a hygiene education programme these aids can be used to raise the interest of the community and to introduce the programme. During the programme they can be used to stimulate open discussions and help to clarify points or to capture the attention of people who are losing interest.

Audio-visual aids can do a lot to facilitate hygiene education. Such aids, however, do have their limitations and their development and use is not so easy. Some reasons for this are:

- Audio-visual materials can help to give information on what kind of behaviour may help to reduce health risks. But as we discussed before (see page 11) there is a big difference between knowing what is good for our health and doing it. For example audio-visual aids can show us how to swim. But this does not mean that we can swim once we jump into deep water. More likely we will drown. In the same way audio-visual materials can show us how to use a standpost properly. But effective learning will only be by doing. This does not mean that it is useless or wrong to give information. The right information at the right time will do a lot to increase understanding and to facilitate behavioural changes.
- Audio-visual aids will fail to have much impact when they are not used in or followed by open discussions. For example, we show a film on the control of flies. Everybody has an interesting time and returns home. Will people now follow the suggestions to control flies as shown in the film? Probably not. Only when the main points of the film are related to everyday life and proper improvements are discussed we may expect a positive impact. So whether or not we are using audio-visual aids, it is always important to have open discussions if we want to promote behavioural change.

- Visual materials give even more difficulties than other aids. First of all people often do not understand the message in a picture. Or they do not see it as related to their own lives. We can partly overcome these problems by using the guidelines for the development of visual aids as described on page 72. But even then visual aids will be difficult to understand in the right way. Moreover pictures do not show why or how often a particular practice should be followed. For example, a picture of a woman washing her baby does not show why and how often the baby should be washed. This is why it is always necessary to explain pictures and to discuss in full detail the points you want to make. The best aid in a hygiene education programme is always a good hygiene promotor.

Some general points for using audio-visual aids are:

- plan your activities carefully. The better you are prepared the better you can work;
- adapt your activities to the group you are working with. For example, you cannot do activities in the same way for children as for local caretakers;
- before you use audio-visual aids try them out first to learn their possibilities and limitations;
- when you show visual aids make sure that everybody can see them;
- keep the activities clear and simple. Complicated activities will fail to have impact;
- do not try to do too much at a time. When you want to do too much people will miss your points;
- repeat keypoints in various ways;
- use the same audio-visual aids several times. The first time people are often more interested in the aid itself than in the point you want to make;
- stimulate open discussions with and amongst the people involved whenever you can;
- evaluate your activities every now and then (with the help of the people in the community);
- share your experiences with other hygiene promotors and discuss problems and possibilities.

4.2. THE USE OF AUDIO-VISUAL AIDS

There are many audio-visual aids from posters to television programmes. All aids have their own possibilities and limitations. The simpler aids are usually cheaper, require less training and give the least problems in use.

In Annex C. a list of addresses is included of organizations that produce audio-visual aids. It may also be a good idea to contact the health education department or other water supply and sanitation projects in your area to ask for information, experiences and materials.

There are some important advantages to develop your own community-based aids. First of all you will find it easier to use aids you developed yourself. Secondly you can choose aids that really fit local circumstances. Thirdly, it creates the best opportunities to adapt the aids to the group you are working with (the so-called audience). On page 72 there are some guidelines for the development of visual aids.

Sometimes it is even better when you can stimulate the people to develop their own audio-visual aids. In that case the development of aids is a hygiene education activity in itself and will surely have impact.

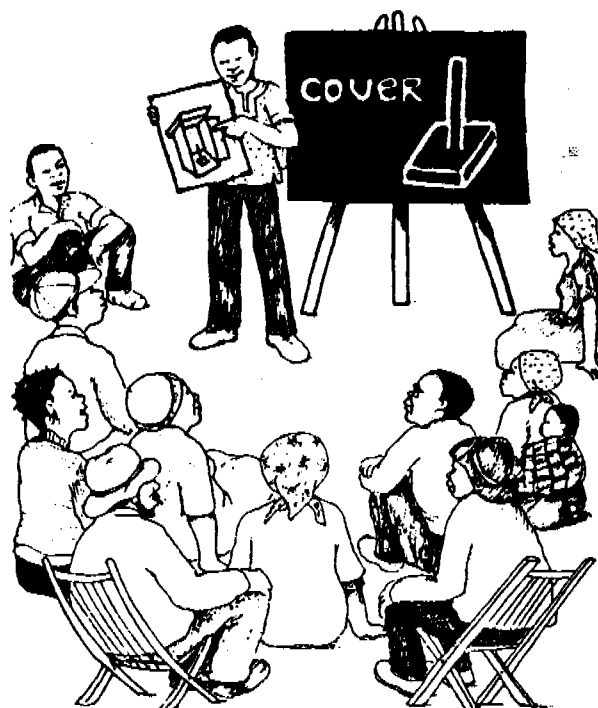
The following suggestions are for the greater part taken from the books written by Denys Saunders and by David Werner and Bill Bower, (see references).

Chalkboard (blackboard)

A chalkboard is a dark-coloured board on which you can write and draw with chalk. It is one of the best, cheapest and simplest of all visual aids. If the chalkboard is not too big or too heavy it can be taken from one place to the other. It may be a good idea to make or buy a roll-up chalkboard as it is light, compact and easy to carry, (see Saunders for details).

Always put the chalkboard where it is easy for you to use and where everybody can see it. Avoid drawing a great deal on the board beforehand. It is much more interesting when the drawings are developed on the spot. Use the drawings to illustrate your talk. You are making the best out of this aid when the pictures help to illustrate your words and your words help to explain the pictures. But remember to speak loudly and clearly when you have to face the board for short moments. As you talk and draw, try to involve your audience as much as possible. This can be done by asking questions or by asking the audience to finish the drawings.

It will need some practice to make the best use of the chalkboard. But then it will prove to be a valuable aid in most circumstances. It also can easily be combined with other audio-visual aids.



Flannel board

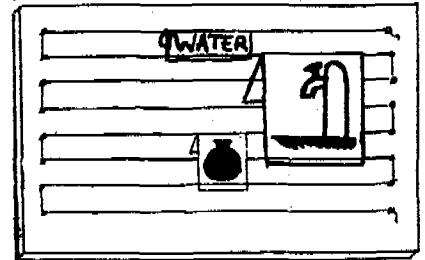
A flannel board is a board on which you can place (stick) and remove pictures. It is made of a board, covered with flannel or a rough cloth. Pictures for the flannel-board can be cut from magazines, posters, and so on. And of course you can make your own pictures and cut them out. Glue flannel, sandpaper, or something else on the backs of the pictures so they will stick to the flannel board.

A flannel board is a handy teaching aid to illustrate your talk once you have learned to handle it. It can be used in the same way as a chalkboard with the difference that the pictures have to be prepared beforehand. Always select the pictures carefully and put them in the right order before you start talking. Stick the pictures to the flannel board (or take them away) as you develop your talk. Movement and change are important when this aid is used. But always stand on one side so that the audience can see the pictures. Try to involve the audience as much as possible, for example by asking them to tell their own story with the help of the pictures or by asking them to help you to prepare new pictures.

There are many variations on the flannel board, like magnetic boards, string boards, and so on. A string board is shown in the drawing.

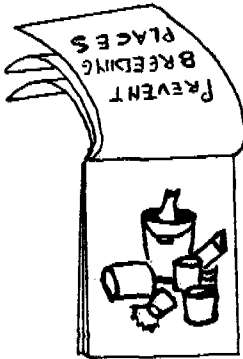
Stretch strings or elastic ribbons across a board or frame.

Then slip pictures on folded paper or cardboard over the strings.



Flash cards and flip charts

Flash cards are cards showing a series of pictures. They can be used to tell stories or to explain something step by step. As the cards can be put in any order, they can be used to illustrate different talks. Flash cards can also be used for playing educational games. In that case the cards are often smaller in size. Flash cards can be drawn on cardboard (thick paper) or made of cloth. And of course you can make them yourself. Or you can stimulate people in the community to make (and use) them. When you find it easier to keep the pictures in one order they can be joined together in some way. For example you can make them into a flip chart (see drawing). Flash cards and flip charts are easier to handle than flannel boards and chalkboards for persons who do not have much experience with hygiene education materials.



Picture stories and photo novels

Picture stories (or comic strips) and photo novels are other visual aids to discuss health problems. Photo novels are picture stories that use photographs instead of drawings. On page 58 you will find an example of a picture story. Try to make your own picture stories and stimulate others to make them. It will provide a lot of fun and it is at the same time a good aid to promote hygiene behaviour. If someone has a camera, a photo novel may be made of a hygiene problem in your area.

Filmstrips and slides

Filmstrips and slides are series of pictures that have to be projected against a wall or sheet. Flimpstrips and slides are the same sort of aids, but filmstrips come in a roll. They are not so expensive as slides but can only be shown in the order they come in. Slides are separate pictures. They can be shown in any order. Filmstrips and slides are available from various organisations. Many of these filmstrips and slides come with written explanations to help to tell the story. These aids are very promising (people like to see these pictures) but there may be difficulties in using them. This is because:

- they may be too expensive to buy;
- power (electricity or batteries) and a projector is needed to show these pictures;
- what the pictures show and tell may not fit the situation in your area.

Models

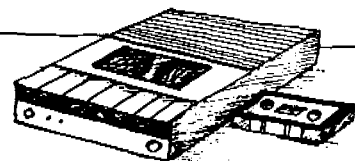
A model is a copy of an actual object, only smaller (like a doll is a model of a human being and a toy car is a model of full-scale car). A model is a very good educational aid. It is interesting to see and easier to understand than a picture. The only problem may be that people will get a wrong idea of the real size of the thing. This can be prevented by pointing out the real size. Models can be made of all kinds of local materials. It may be a good idea to make a model of a standpost or a latrine to stimulate discussions about the new facilities that will be constructed.

Stories

Up till now we discussed visual aids that can be used to illustrate talks. But we also may tell a story to draw attention to an important point we want to make. On page 50 you find some short examples. Of course these stories first have to be adapted to local circumstances. Give the persons in the stories local names and include local situations to make them more interesting. Keep the story simple and clear. Make only one or two main points and do not use more than a few hundred words. Stories can be very good aids to promote discussion about everyday practices, knowledge and beliefs. Of course pictures can be used to illustrate the story.

Cassette player

A cassette player can record voices, music and other sounds on tapes, so that it can be heard again and again. If there is a cassette player (with batteries if there is no electricity) you may record stories or discussions on the tape and use



it in small group gatherings. People often like to listen to tape cassettes, especially when familiar situations, some humour and some music are included. Again, it is important to keep the story or discussion short (not more than 10 minutes) and clear. It is better to prepare a series of short stories than to try to put everything in one. Use local speakers, and make reference to the local situation to make it more interesting. The use of a cassette player has some important advantages:

- it is an easy aid to transport;

- it can be used nearly everywhere. But remember that everyone must be able to hear the voices. So do not use it in a noisy place or where too many people are gathered;
- it can be turned on and off as you like. For example you can turn the player off when somebody has a question or when the audience likes to discuss something the voices have said;
- the tape can be played again and again. Most often the first time people will be more interested in the voices than in the point you want to make. This does not cause problems as you just can play the tape again;
- it is much easier to understand a local story or discussion than any kind of pictures;
- it can be used easily by other people when you are not there. When pictures are used by other people they may tell the wrong story or emphasize the wrong point. This is not possible for cassettes as the story or the discussion is on the tape;
- it is a very good aid to raise the interest of the people and to stimulate discussion on hygiene behaviour, beliefs and problems.

Songs

Just like stories we may use songs to draw attention to an important point we want to make. Many people like to sing (and dance) and almost every community has someone who can sing and put words to music. This person can be asked to make a song about a particular health topic. The following song is just an example:

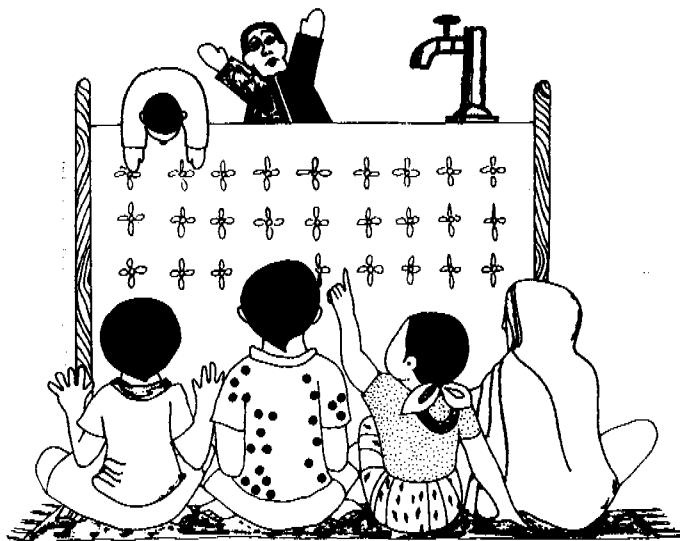
"Cleanliness"

Soap and water on the face
for a kiss from mother
Soap and water in the hair
that she has to comb.
Hands, clean, very clean
because they caress;
brushes for nails and teeth,
don't let me forget.
All my body clean;
more soap, more water, more,
and clean my soul too,
with the water of kindness.

(From: A programme for Health Education related to water, by Margarita Cardenas, Peace Corps, Washington, 1980).

Drama and puppet shows

Hygiene educational stories can also be used in dramas and puppet shows. In many societies there is a tradition of some form of drama or puppet show. It may be a good



idea to build some of your activities on such a tradition. One possibility is that a group of players is invited to prepare and play something about a water and sanitation related subject. You may ask the players to join the discussion after the show is over. Another possibility is that interested persons from the community form a group of players. When they prepare (with your help) a play, think of the points that have been made for stories on page 69. A drama or puppet show will have more impact when the audience is involved as much as possible in what is happening before and during the performance.

Films and video

These aids are attractive for nearly everybody. That is why they may be successfully used at the start of a hygiene education programme, or when the standposts are put into use for the first time. But films and video have some disadvantages too:

- they are often much too expensive;
- expensive and heavy equipment is needed to show the film or video. Also you need electrical power and someone who can operate the equipment;
- it may be difficult to relate a film or video to the everyday life of the audience.
- people may be more interested in the mechanics of projection or the show itself than the message.

Radio and television

Radio and television are promising aids but often it will not be easy to integrate radio or television programmes into your hygiene education activities. There are two important reasons for this. First of all it is very difficult to match your activities with these programmes as you cannot influence the time when they will be shown. And secondly, you cannot influence the subjects of these programmes. But when you come to know about a radio or television programme you may ask for further information and try to integrate it in your activities. For example you may stimulate the people in the community to form radio talk groups. These are groups of people who listen together to a radio programme and discuss then what they have heard on the radio and what they can do with that information in their own family or their own community.

4.3. GUIDELINES FOR THE DEVELOPMENT OF VISUAL AIDS

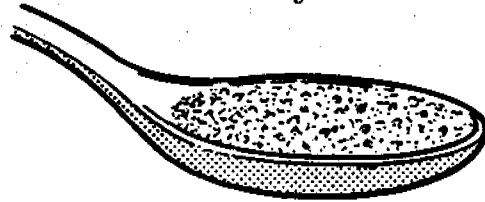
1. Keep pictures as simple as possible. The simpler the picture, the easier it is to draw the attention of the audience to what you want to show them.
2. Leave out unnecessary details, but make the picture not too simple. Line drawings toned in are the easiest to recognise.
3. Leave out backgrounds. Backgrounds draw the attention away from what you want to tell.
4. A picture is better understood when it has only one, sharp meaning. When you want to tell more than one thing, it is better to make a series of pictures.
5. When you show a series of pictures together on one page or poster, make sure that the right order is understood. Not everybody looks at pictures in the same order. (See for example pages 32 and 58.)
6. Illustrate a person's whole body and not only a part of it. If only a part of the body is shown (for example a head, hands or feet) it is often not easily understood. (See for example page 9.)
7. Pictures will be more successful if faces, clothing and buildings are based on what is familiar locally.
8. Food, animals and objects (like a spoon or a pot) are more difficult to recognise than pictures of persons.
9. Use only common objects. For example do not show an uncommon water vessel.
10. Coloured pictures are attractive, but are no easier to recognise than black and white pictures.
11. If you want to use pictures before an audience, be sure that they are big enough to be seen by everybody.
12. Avoid making very small objects or animals too big. For example, when you show a picture of a very big mosquito, people will not recognise it as the insect they know. (See for example page 61.)
13. Perspective (for example a house at a distance) is often very difficult to recognise.
14. Use only words in pictures (of course in local language) when your audience can read.
15. Combining upper and lower case letters is easier to read than only capital letters.
16. Symbols such as crosses, arrows, lines for speed, and so on, are difficult to understand when they are not carefully explained.
17. Remember local customs. For example, some colours may have a special meaning; some topics may be too sensitive to show in pictures (for example people defecating like the ones shown on pages 49 and 55); in some societies it is not allowed to show persons in pictures; and so on.

18. Always test (try out) the pictures before you are using them in hygiene education activities. Just ask some people in the community to tell you what is on the picture and what do they feel about it. If your pictures prove to be unclear or if they do not correspond with what you want to show, you can adapt them.
19. When you show a picture before an audience, give the people plenty of time to look at it and to ask questions about it.

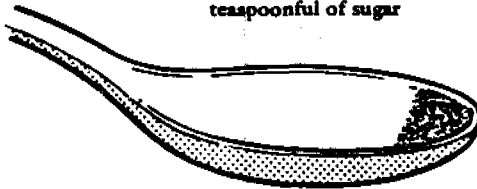


*...whatever aids you are using, open discussions
with and amongst people are always important...*

Oral rehydration drink: another example.

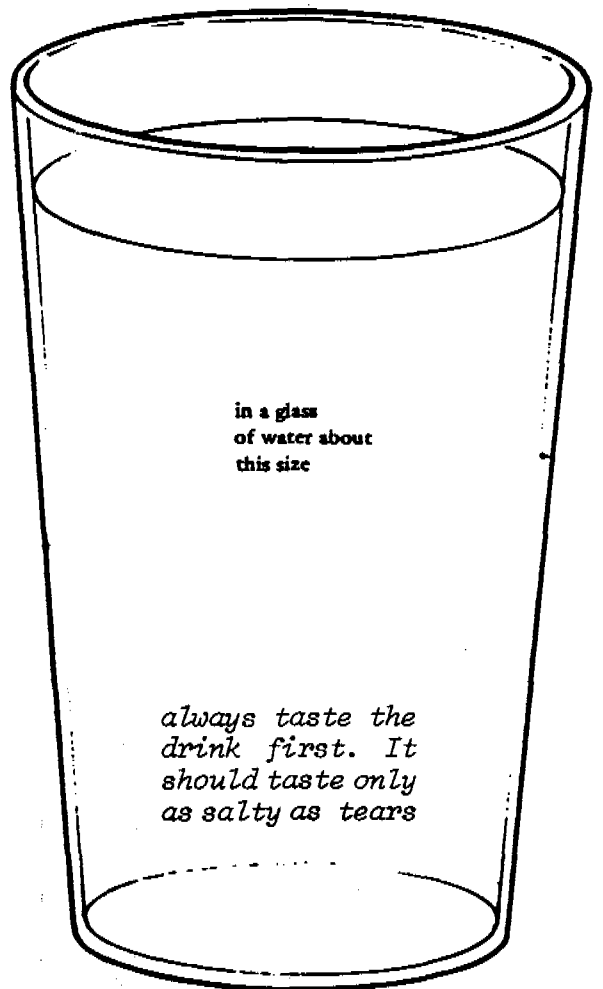


one level
teaspoonful of sugar



SALT

a little salt
at the end of a spoon



in a glass
of water about
this size

*always taste the
drink first. It
should taste only
as salty as tears*

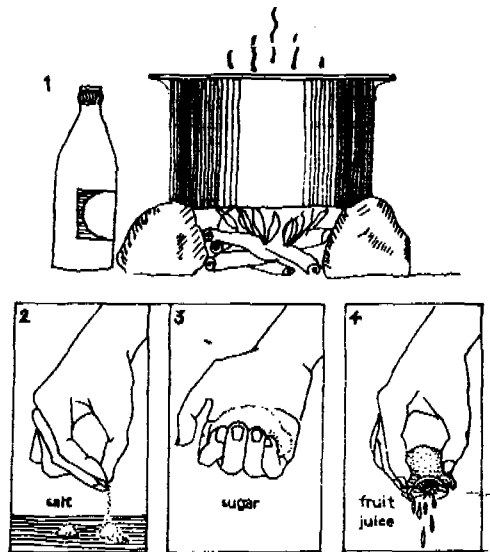
ANNEX A: How to treat dehydration *

Dehydration can be recognised by the following signs:

- the child (or adult) looks very sick;
- the eyes are sunken into the head;
- the cheeks are sunken in;
- the mouth is dry;
- if you pinch the skin, the skin stays pinched up.

Dehydration should be treated as soon as possible by giving the child (or adult) a special drink. Prepare the drink as follows:

1. Boil at least a litre of water for ten minutes and then let the water cool.
2. Add to one litre (or roughly 2 pints) of the boiled water two pinches of salt. A pinch is what you can hold between your thumb and the next two fingers.
3. And add a handful of sugar.
4. And add a cup of orange juice if any is available.



Note: Put the exact amounts of water, salt and sugar together. It is very important not to add too much salt. Always taste the drink first. It should taste only as salty as tears.

Give the drink to the child as follows:

- Feed the child the drink with a spoon.
- If the child vomits, wait a few minutes and then give the drink again.
- Give the child about one quarter of a cup of drink every half hour until the first litre (or 2 pints) is gone.
- Then give about one-half of a cup of drink every hour until a second litre (or 2 pints) is gone.
- After that, give the child as much of the drink as it desires.
- Continue this until the diarrhoea is over.

Note: This drink does not stop diarrhoea, but it saves the child from the danger of losing too much of body water during diarrhoea.

* Adapted from: 'Training manual in elementary hygiene/sanitation and its instruction' by Christine Ansell and Robert Burrowes. However please check with the child survival programme officials in your country for local oral rehydration policies and resources.

ANNEX B: Safe water from wells and handpumps

A site is probably safe to construct a new well if it is uphill from and at least 20 metres (or 50 paces) away from a latrine so that human faeces cannot drain into it.

To protect the well from dirt getting in it is important to:

- construct a wall around the well with a platform and drainage facilities. This will help to prevent soil from falling down into the well and waste water from draining back into the well;
- use only one common bucket to draw water from the well and keep the bucket clean. The bucket can be kept clean by hanging it upside down on a peg high above the ground. (When many people bring their own (often unclean) buckets, the water will become unfit for drinking);
- only use clean hands to handle the bucket that goes into the well, and do not put it on the ground;
- take care that the rope of the bucket cannot get dirty with soil and contaminate the water. To prevent this, a windlass may be put up to wind the bucket up (see drawing) or a bigger platform or a hook for the rope may be made;
- keep the well covered when it is not being used;
- bathe and wash clothes away from the well so that waste water cannot drain back into the well;
- only dispose of faeces far away from the well so that the faeces cannot drain into the well;
- keep surroundings clean as well as the drains so that waste water can always run off.

Many of the above mentioned measures to prevent water contamination also apply for wells where handpumps are used to lift the water instead of buckets.

To guarantee a permanent supply of safe water from the handpumps it is also important to take care of their proper operation and maintenance.

ANNEX C: List of addresses for health education materials

- Atelier de Matériel pour l'Animation (AMA)
P.O. Box 267
Yaoundé
Cameroon

- Voluntary Health Association of INDIA (VHAI)
C-14 Community Centre
Opp. IIT Main Gate, SDA
New Delhi 110016
India

- African Medical and Research Foundation (AMREF)
Health Behaviour and Education Dpt.
Wilson Airport P.O. Box 30125
Nairobi
Kenya

- Appropriate Health Resources and
Technologies Action Group Ltd (AHRTAG)
85, Marylebone High Street
London W1M 3DE
United Kingdom

- Collier Macmillan
Visual Learning Division
Kern House
61/2 Lincoln's Inn Fields
London WC2A 3XB
United Kingdom

- Teaching Aids at Low Cost (TALC)
P.O. Box 49
St. Albans, Herts. AL1 4AX
United Kingdom

- American Public Health Association (APHA)
1015 15th Street, N.W.
Washington, D.C. 20005
United States of America

- Hesperian Foundation
P.O. Box 1692
Palo Alto, Ca 94302
United States of America

- Peace Corps
Information Collection and Exchange
Office of Programming and Training Coordination
806 Connecticut Ave., N.W.
Washington, D.C. 20525
United States of America

- World Neighbours
5116 North Portland Avenue
Oklahoma City
Oklahoma 73112
United States of America

- Groupe de Recherche et d'Appui pour
l'Autopromotion Paysanne
B.P. 785
Bobo Dioulasso
Upper Volta

- Bureau d'Etudes et de Recherches
pour la Promotion de la Santé
B.P. 1977
Kangu-Mayombe
Zaire

- UNICEF Country Offices
Normally located at the principal town of the country.

ANNEX D: Selected Readings (alphabetic on title)

Keehn, Martha (ed.)

Bridging the gap:

A participatory approach to health and nutrition education.

Westport, Save the Children, May 1982.

Eshuis, Jan and Peter Manschot.

Communicable diseases.

Nairobi, African Medical and Research Foundation, 1978.

Rural health series, 7.

Communicating with pictures in Nepal

Kathmandu, National Development Service, Tribhuvan University and UNICEF, 1976

Wood, C.H., J.P. Vaughan and H. de Glanville (eds).

Community health.

Nairobi, African Medical and Research Foundation, 1981.

Rural health series, 12.

Community health education in developing countries:
getting started.

Washington, D.C., Peace Corps, 1978.

Revised edition forthcoming.

Peace corps information collection and exchange program and training journal manual, no. 8.

Cairncross, Sandy and Richard G. Feachem.

Environmental health engineering in the tropics:
an introductory text.

Chichester, John Wiley, 1983.

The environment of simple water supplies: A selected and
annotated bibliography in support of public standpost
water supplies.

The Hague, IRC, 1984.

Muiga, M.I.

Environmental health training manual for village health
workers.

Brazzaville, WHO, Regional Office for Africa, 1980.

Pisharoti, K.A.
Guide to the integration of health education in environmental health programmes.
Geneva, World Health Organisation, 1975.
WHO offset publication, no. 20.

McJunkin, F. Eugene
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ANNEX E: Addresses of organisations from which illustrations are reproduced

- African Medical and Research Foundation,
Health Behaviour and Education Department,
Wilson Airport, P.O. Box 30125, Nairobi, Kenya.
- Afrolit Society
P.O. Box 72511, Nairobi, Kenya.
- Bureau d'Etudes et de Recherches pour la Promotion
de la Santé,
B.P. 1977, Kangu-Mayombe, République du Zaïre.
- Care - West Java
Jl. Setiabudi 388, Bandung, Indonesia.
- Groupe de Recherche et d'Appui pour l'Autopromotion
Paysanne,
B.P. 785, Bobo-Dioulasso, Upper Volta.
- Hesperian Foundation
P.O. Box 1692, Palo Alto, CA 94302, USA.
- Macmillan Press London Ltd.,
4 Little Essex St. WC2R, 3LF London, United Kingdom.
- Ministry of Health, Directorate General Community Health
Jl. Pasar Minggu 17, Jakarta Selatan, Indonesia.
- Ministry of Health, Health Education Section
P.O. Box 30377, Lilongwe 3, Malawi.
- Ministry of Lands, Housing and Urban Development,
P.O. Box 9132, Dar es Salaam, Tanzania.
- Ministry of Local Governments and Lands,
Applied Research Unit,
P.B. 006, Gaborone, Botswana.
- Peace Corps, Information Collection and Exchange
806 Connecticut Ave. N.W., Washington, DC 20525, USA.
- Prime Minister's Office
P.O. Box 980, Dodoma, Tanzania
- Shanta Bhawan Community Health Programme,
c/o VHAI, C-14 Community Centre, New Delhi 110016,
India
- World Health Organization
Division of Environmental Health
1211 Geneva 27, Switzerland.

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