

# FOOD, ENVIRONMENT AND HEALTH

A GUIDE FOR  
PRIMARY SCHOOL TEACHERS

Trefor Williams, Alysoun Moon & Margaret Williams



World Health Organization  
Geneva

# **Food, environment and health**

A guide for primary school teachers

**Trefor Williams**  
**Alysoun Moon**  
**Margaret Williams**

HEA Health Education Unit,  
School of Education,  
University of Southampton,  
Southampton,  
England



World Health Organization  
Geneva  
1990

WHO Library Cataloguing in Publication Data

Williams, Trefor

Food, environment and health : a guide for primary school teachers.

1. Health education—in infancy & childhood 2. Nutrition—education 3. Environmental health 4. School health services 5. Teaching 6. Developing countries I. Moon, Alysoun II. Williams, Margaret III. Title

ISBN 92 4 154400 7

(NLM Classification: WA 590)

© World Health Organization 1990

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. For rights of reproduction or translation of WHO publications, in part or *in toto*, application should be made to the Office of Publications, World Health Organization, Geneva, Switzerland. The World Health Organization welcomes such applications.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions expected, the names of proprietary products are distinguished by initial capital letters.

The authors alone are responsible for the views expressed in this publication.

Typeset in India  
Printed in England

# Preface

Health education functions in a number of settings or situations. One of these vital settings, which has sometimes been given inadequate attention, is the school where children spend their most impressionable years. It is therefore fitting that, with the adoption of primary health care as a national and global policy, every effort must be made to include effective school health education as a means of implementing that policy. Such a policy recognizes that education and health must meet on common ground and assist each other in achieving the goal of enhancing the lives of young people through education for health.

**Dr Hiroshi Nakajima, Director-General, WHO**

Many of the acute health problems in developing countries, especially those countries where malnutrition and food-borne diseases are common, arise because of poor standards of sanitation and personal hygiene. Children are particularly prone to diarrhoea and other intestinal infections, which add to the damage done by malnutrition; in the worst cases the result may be retardation of mental and physical growth, or even death.

The value of education in promoting healthier habits relating to food, personal hygiene and the environment is receiving increasing recognition, and the trend of including health sciences in school curricula is being encouraged. Nowhere is this more relevant than in primary schools, where well conceived, practical and appropriate health education programmes can be a means not only of motivating young people to adopt healthier life-styles but also of influencing the older members of society.

## Acknowledgements

A preliminary draft of this publication was reviewed at a WHO Consultation on Health Education in Food Safety, Geneva, 27 April–1 May 1987. The valuable contribution made by the United Nations Educational, Scientific and Cultural Organization, Paris, in providing guidance through various stages of development of the book is greatly appreciated. The preparation of illustrations was facilitated through funds provided by Unilever PLC, London, England.

# I Introduction

## How to use this book

As a teacher you are encouraged to regard this book as a resource, to assist you in the planning and implementation of health education programmes. It is not intended that the book be followed slavishly from beginning to end, but rather that it be used as a guide to producing teaching programmes of maximum relevance to your particular community, school or group of pupils.

For this approach to be successful it is essential that you become familiar with the prevailing conditions and principal needs of your own community. The process of familiarization can take the form of an inquiry, with pupils undertaking an investigation of the community and its environment. Individual pupils, or small groups, can be asked to find the answers to a number of specific questions, which can then serve as the basis for the health education curriculum.

The following are examples of facets of community life that can be investigated by you and your pupils. The information gathered should help to identify the main health problems of the community and thus provide a focus for the teaching programme. Discussion with community health workers would also be helpful in pinpointing any specific health-related issues.

- *Housing and sanitation*

What are the houses made of?

Are they generally well cared for and kept clean?

Are there particular problems in the houses, such as damp, insects, poor lighting?

What water facilities are available for washing, cooking, drinking?

Are there communal facilities — wells, springs, latrines? Are these kept covered, protected and hygienic?

- *Population*

How many people live in the community?

How many are children?

How many children do most parents have?

How many old people (over 60) are there? What are their particular problems? Can these be solved and, if so, how?

- *Health*

What is the general health status of the local people?

What are the most common illnesses in the community? How are they caused?

What are the remedies, if any?

What are the most common illnesses among the children? What are their causes and could they be prevented or cured?

Are there doctors, nurses, health workers or sanitarians in the community or available locally?

- *Nutrition*

What are the main foods eaten in the community? Are they produced locally? Are there local farming combines or cooperatives?

What cooking facilities are there in homes?

How is food stored?

Are there particular local problems with drinking-water supplies?

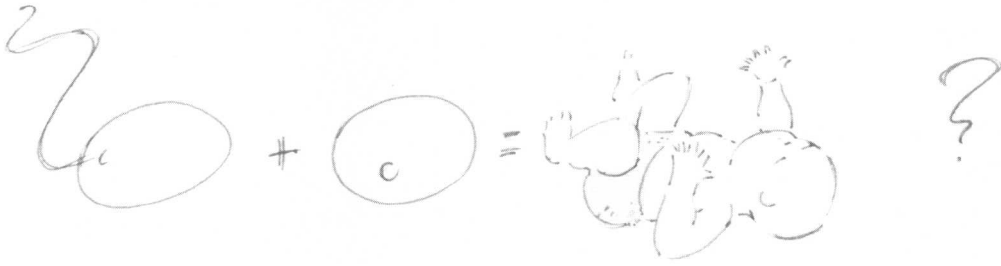
Each of the sections, or units, of this book deals with a specific health topic that appears to be relevant to most developing countries, providing background information and describing methods that may be suitable for teaching about it.

You need not use the ideas in the sequence in which they are presented. Choose your own starting point—something of topical interest or local significance, or something that arises naturally out of other work you are doing with the children, in science, mathematics or language, for instance. Above all, remember that what you teach must be related to the lives and needs of the children and their community; the book can only guide you in this, providing ideas for you to develop yourself.

## **What is health education?**

Health education can be thought of as a process by which children learn to promote and protect their own health and that of the community in which they live. The 'process' will be considered in more detail later, but for now we will consider the three closely related factors that influence the health of children.

**Genetic inheritance.** When a baby is conceived in the mother's womb, a unique individual is created, with potential for physical, social, emotional and intellectual growth. The genetic inheritance of that individual, however, can have a profound effect on future health, in passing on such diseases as sickle cell anaemia and haemophilia.



**Environment.** The environment in which the individual lives can be considered under two headings:

- *Physical environment*
  - the kind of home the individual lives in
  - whether that home is dry, comfortable, and free from vermin and insects
  - whether there are adequate water sources and cooking facilities
  - whether water sources are protected from contamination.
- *Social environment*
  - quality of family life; whether children are loved and cared for by parents
  - quality of community life; contributions made to community life and relationships with members of the community.

**Personal behaviour.** The health of the individual can be affected by a number of aspects of personal behaviour, including the following:

- personal hygiene and cleanliness
- diet
- cleanliness of the home
- hygienic handling of food.

At present little can be done about diseases transmitted genetically. However, there are many ways in which influence for good can be exerted on our environment and on our behaviour, and the best way of doing this is through education. *Knowledge, understanding and action* are the three key words for health education.

Health education, then, can be considered as a process of:

- *Teaching and learning*
  - What is the important knowledge to pass on to children?
- *Helping children to understand*
  - How can children be helped to understand the relevance of this new knowledge to their own lives and those of their families and community?
- *Opportunities for practice*
  - What activities can the children take part in, to allow them to put into practice what they have learned?

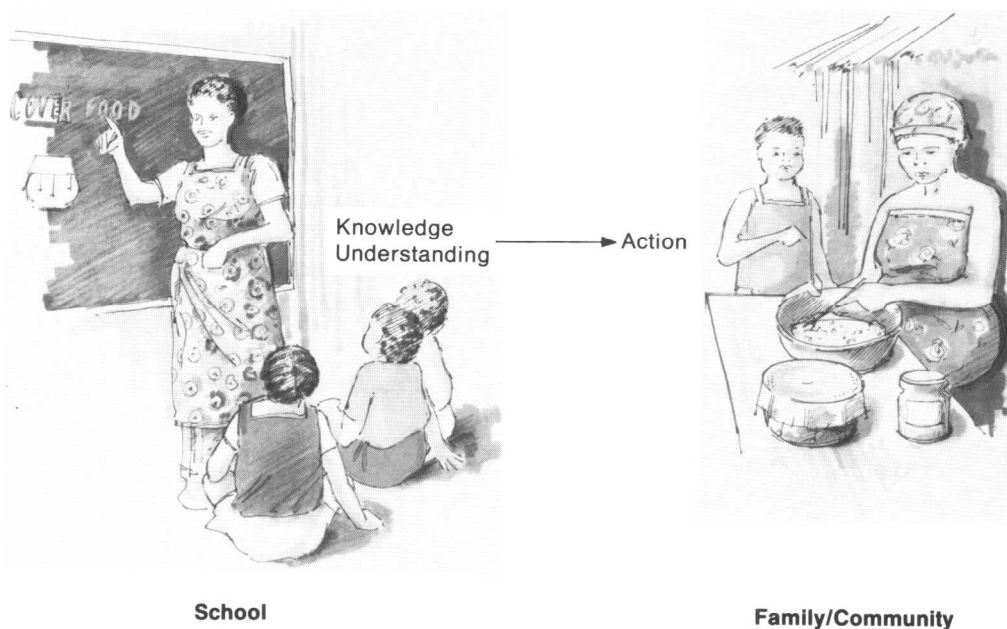
For your work with the children to be successful, you must consider these three aspects of health education carefully and decide on how best to weld them together into an effective teaching programme.

## What do children already know?

In order to make the best use of whatever resources are available to you, it is important that you try to discover how much the children already know about the topics you plan to cover in your teaching. Your pupils will come to school with knowledge, attitudes and patterns of behaviour learned from families, friends and the community in general. The influence of all these groups is very strong — children tend always to copy what is done by the adults who are important to them. The success of your teaching programme will depend on your working with families and the community, not in conflict with them. Local health workers and community leaders can be of great value to you; discuss your teaching programme with them, and invite them to become involved with and contribute to your work. They may be able to make additional materials available to you, such as posters, books and leaflets.

## What is the local community doing?

From research in different parts of the world it has become apparent that interaction between the school and families and the community increases the effectiveness of what the children learn in school. When children can see that what is taught in the school is practised in the home and community they soon realize that what they learn is important.





It is most important for you to find out what the community is already doing in health education, and what plans the community has for future action. Through the children and their parents, the school can sometimes act as the initiator of community action, and you the teacher can play an important role in this, working closely with health workers and community leaders.

### Better nutrition

Knowledge  
Understanding  
Action



**School**

Involve  
→  
parents



**Family**

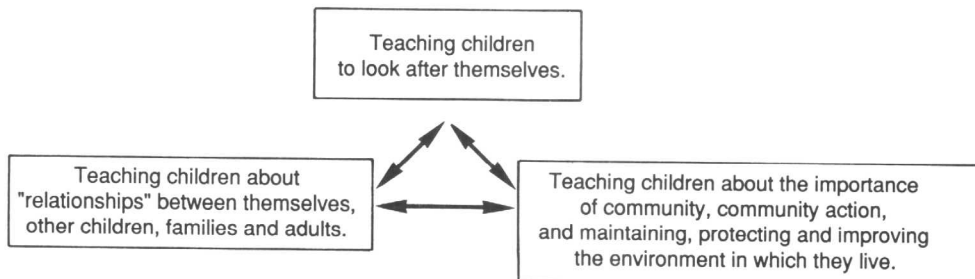
- • Better food storage
- • Family garden
- • Irrigation
- • Natural fertilizers
- • Rotation of crops

**Community**

Whatever you decide to teach you must try to make sure that the children understand what they learn and are able to practise it in their lives at home and in the community. Good teaching is always made relevant to the lives of the pupils.

## The content of school health education

School health education can be thought of as having three main elements, as shown in the following diagram.

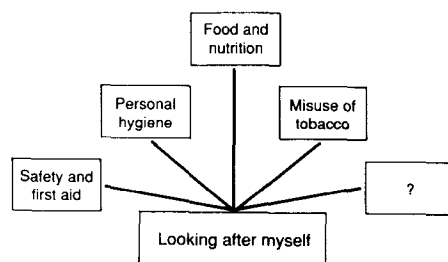


All three elements — let us call them cornerstones — are the foundations of a school health education programme and are very closely interlinked with each other. None can stand completely alone because each has implications for the others.

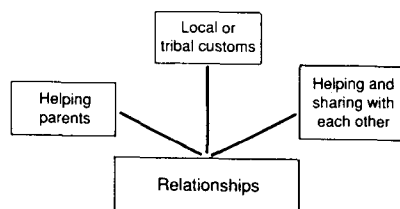
The cornerstones offer a basic framework that can help to clarify how the health needs of your own community might be met.

Your school health education programme will need to reflect both immediate and long-term needs. For example, a community might have a large number of children suffering from diarrhoea and have identified the cause as poor personal hygiene (not washing hands after using the latrine). This is an immediate need that can be dealt with by an intensive education campaign through school and parents. On the other hand the health education programme must also address other issues such as the protection and storage of foods, or accident prevention, which have a longer-term impact upon the community. The following are examples of how a school programme can be built up, using the three cornerstones as a base.

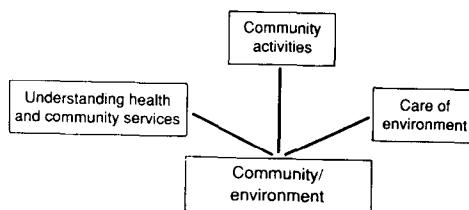
*Looking after myself.* What are the things the pupils should learn which will help them to look after themselves and take more responsibility for their own well-being? What are the priorities for your school health programme? Seeking advice from the local health worker will assist you in answering these questions.



*Relationships.* How can good relationships be fostered with and between the children? How can they be helped to understand and cope with their feelings and emotions? Relationships are important because they are the basis of all social life. Children need to learn their responsibilities towards others as well as the benefits of fostering good human relationships.

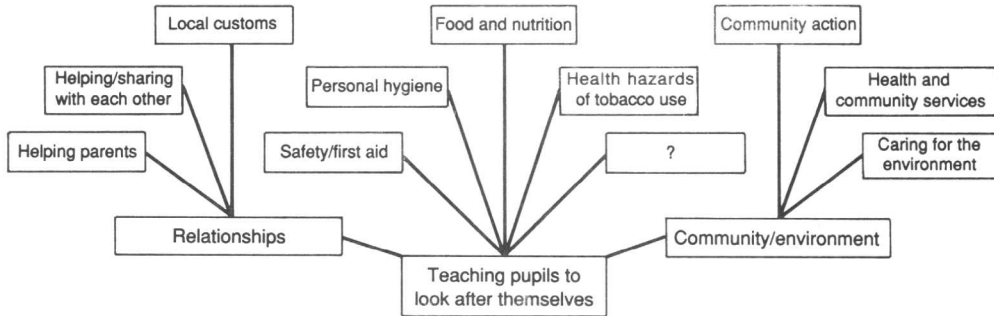


*Community/environment.* How can community spirit be fostered, involving an understanding of the importance of caring for and improving the environment?



Each of the cornerstones can provide starting points for 'themes' or projects which you might decide upon as appropriate for your class.

Putting the three cornerstones together a full health education programme can be represented as follows:



## The process of school health education

Having decided the content of the school health education programme—the ‘what’—it is now necessary to consider the teaching process itself—the ‘how’.

Teachers used to think of teaching as being like filling up a bottle with liquid, where the liquid was knowledge and the bottle was the child, or of the children as clean slates upon which knowledge could be written.

Experience and research, however, have shown that children (and adults!) learn much more, more effectively, when they are actively involved in the learning process and given the opportunity to reflect upon what they learn, by discussing it with others and by finding practical application for their knowledge. Children learn more by doing than by being told.

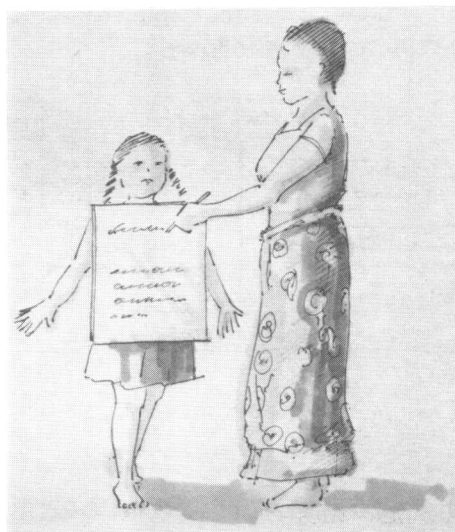
A suitable health education process might be described as follows:

- In consultation with the local doctor or community health worker, decide upon an overall health education



plan for your school. Bearing in mind the 'cornerstones', work out what topics need to be tackled.

- For each topic
  - Find out what the community is already doing or plans to do.
  - Find out what the pupils already know (and put into practice).
- Decide what your goals are to be for each topic:
  - What *knowledge* do you wish your pupils to acquire?
  - How will you ensure that the pupils *understand* the importance of the knowledge they acquire and its relevance to their lives?
  - What specific *actions* will you expect as a result of your work with the pupils?



### *Example—food topic*

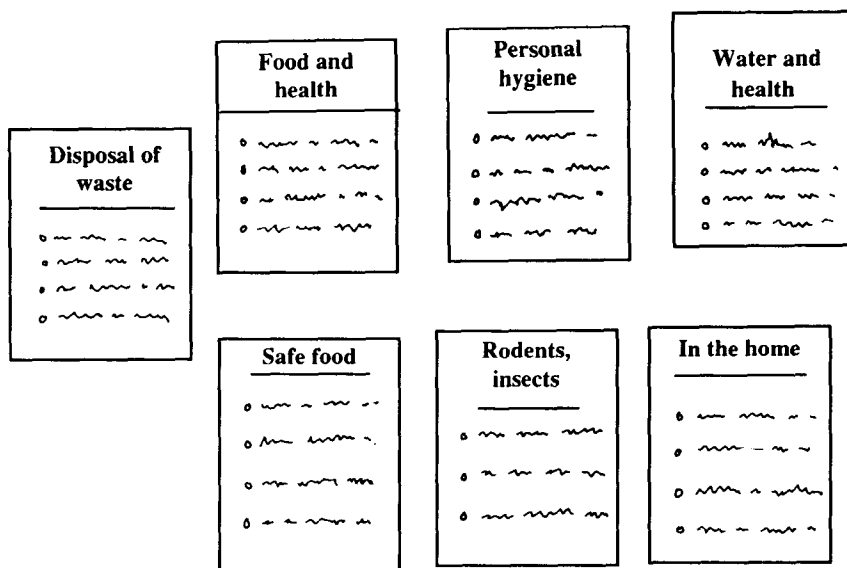
- Finding out  
Ask:
  - Why do we need food?
  - Which foods do we need for growth, which to keep healthy?
  - Are there any local campaigns or education groups?
  - What actions are planned—fishing, crop irrigation, local gardens, etc?
  - Can the school activities be linked with those of the community?
- Setting goals:
  - Food groups. Make sure that the conventions taught in school are the same as those adopted by the community.
  - Importance of foods for growth. Identify the locally available foods.
  - Importance of health-supporting foods. What fruits and vegetables are available locally?
  - Making a kitchen garden. What can be grown? What is needed for the work?
  - Keeping livestock. What livestock are available? How should they be looked after?

- Balanced meals. What opportunities can be provided for pupils to learn to prepare balanced meals?
- Fuel for cooking. Is fuel readily available? What kind of fuel is it?

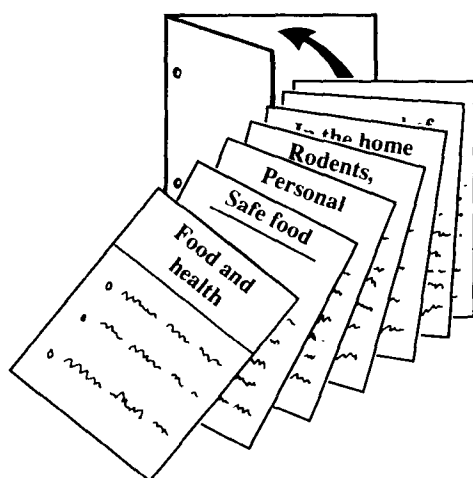
Pupils will learn and understand more easily and effectively if the teaching is made interesting and enjoyable. The greater the variety of teaching methods and aids you can employ the easier it will be to capture and hold the pupils' attention. Concentrate on finding the best methods of presenting new knowledge and on involving pupils more actively in the learning process. The following approaches have been found to be highly successful:

- For communicating new ideas:
  - Flannelgraphs
  - Models and demonstrations
  - Colour slides/filmstrips
  - Story-telling
  - Puppet plays
  - Play-acting
  - Posters and booklets
  - Songs and dances
  - Help from outside workers
- For developing understanding:
  - Group discussion — presentation of conclusions to others.
  - Making up stories, or inventing the end to a prepared but unfinished story.
  - Making up plays to act with others.
  - Inventing songs or dances to express ideas.
  - Role-playing — taking on the roles of others in the community.
  - Designing posters to express ideas.
  - Conducting surveys — finding out what others do or feel about particular topics.
  - Making puppet theatres and presenting puppet plays.
  - Making a commitment, by means of a 'contract' with family or friends, to some practical activity over a period of time — trying new foods, for instance, or being particularly diligent about personal hygiene.

It could be valuable for each child to have a record of all the work attempted, perhaps in the form of a booklet in which key information from each unit is summarized. The basic information can be supplemented by drawings, cut-out pictures, stories and anecdotes relating to the children's own situation and community. As each unit is completed the appropriate new section can be added to the booklet.



WHO 89171



## Fitting health education into the school curriculum

Despite the acknowledged importance of health education and its relevance to the children's lives and to the community in general, it is often difficult to find space for it in the school curriculum. The subject must compete in the timetable with language, science, mathematics, geography, and so on—all the other important elements of children's education. However, since the good health of any community may be regarded as one of its most precious resources, the promotion of health should be a primary aim of its school system.

There are several possible approaches to solving this problem:

- Teach health education as a separate and distinct subject, setting aside one 40-minute period each week, or perhaps two 20-minute periods, for lessons.
- Integrate health education with other subjects, for example:
  - science — many links already exist between the two subjects, through human biology, the study of plants and their growth, the study of microorganisms, etc.
  - geography — links can be established through the study of climate and soil types, food production and distribution, the water cycle and water sources.
- Use topic or project work to link health education with other subjects. For example, a project on water could involve children in:
  - survey and number work — identifying local sources of water and discovering the uses to which water is put in the community.
  - science — learning about the principles of water pumps and siphons.
  - geography — studying the topography of the region, patterns of rainfall, natural water sources.
  - language — writing reports, holding discussions in class and with community leaders and officials.

Experience of health education throughout the world suggests that a mixture of these methods is likely to be the most productive approach. Above all, be guided by your own knowledge of your area and its problems and by consultation with local health workers, community leaders, parents and, of course, the children.

# Contents

Preface	vii
Introduction	ix
<b>Unit 1 Food and the body</b>	<b>1</b>
Key issues and activities	1
Why is food important?	3
Foods we eat	3
Food and the needs of the body	3
Foods for growth	5
Foods for energy	8
Health-supporting foods	10
What happens to the food we eat?	12
Food production: the school garden	13
Stage 1: The site	13
Stage 2: The crops	14
Stage 3: Starting the garden	14
Preparing and eating the produce	15
Other issues linked to the school garden	15
Appendix	17
<b>Unit 2 Keeping food safe</b>	<b>19</b>
Key issues and activities	19
The contamination of food	21
'Lethal lurkers' — bacteria and other microorganisms	24
The growth of bacteria	26
The spread of bacteria and other microorganisms	29
Basic rules for safe food	30
Cleanliness	30
Food storage	32
Meat and meat products	35
Food preparation and cooking	36
Non-bacterial food-borne diseases	37
Appendix 1	39
Appendix 2	40
Appendix 3	41
<b>Unit 3 A safe water supply</b>	<b>42</b>
Key issues and activities	42



Uses of water	43
Living things and water	44
Water and our bodies	45
How the body loses water	47
Dehydration	48
The water cycle	51
Sources of water	52
Water sources in the community	53
Rivers	54
Wells	54
Springs	56
Rain water	56
Making water safe	57
Boiling	57
Filtration	57
Chemical disinfectants	58
Storage of water at home	59
 <b>Unit 4 Safe collection and disposal of waste</b>	 <b>65</b>
Key issues and activities	65
Excreta and other liquid wastes	67
What are faeces?	68
What else do faeces contain?	69
Parasites	70
Safe places to defecate	73
Latrines	74
Other excreta disposal systems	77
The disposal of solid waste	78
Composting	79
Burying	80
Incinerating	80
Appendix 1	83
Appendix 2	85
 <b>Unit 5 Personal hygiene</b>	 <b>88</b>
Key issues and activities	88
Germs, germs, germs	89
Reducing the spread of germs	90
'Germ warfare'	90
Looking after my body	91
The parts of my body	91
Who is responsible?	92