Volume 3 How great is the problem? – Health Impact Assessment

WRC Report No. TT 429/10

Other reports

This guide forms part of a series which is aimed at water supply agencies, water resource managers, workers in health-related fields, as well as communities throughout South Africa. The guide is intended to provide awareness-building information to keep water supplies clean of microbial contamination and thus reduce the incidence of water-related diseases.

The publication of the report emanates from WRC Consultancy K8/638: Guides on the management of water-related Microbial Diseases, Volume 3: How great is the problem? – Health Impact Assessment and previous study WRC Report 925/1/03: The impact of introducing treated water on aspects of community health in a rural community in KwaZulu-Natal.

The following reports form part of this series of Guides on the Management of Water-related Microbial Disease

Volume 1: TT 175/03 1 What is the problem? – Disease Characteristics

Volume 2: TT 297/07 What causes the problem? – A What to do for Water Suppliers following Diarrhoea Incidents

Volume 3: TT 429/10 How great is the problem? – Health Impact Assessment

Volume 4: TT 298/07 How dangerous is the problem? - Communicating the Risk

Volume 5: TT 460/10 What we and our children need to know? – Health and Hygiene Awareness

This guide is available from

Water Research Commission Private Bag X03 Gezina 0031 South Africa

e-mail: orders@wrc.org.za

Disclaimer

This report has been reviewed by the Water Research Commission (WRC) and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the WRC, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

ISBN 978-1-77005-521-6 Set No 978-1-770055-519-3

Printed in the Republic of South Africa

This guideline document presents the third in a five-volume series aimed at addressing the question of how best South Africans can protect themselves from water-related microbial disease. It provides a framework of principles and guidelines for the Assessment of Health Impacts, of water development projects such as water supply, sanitation and hygiene education, irrigation and dam construction.

The methods and materials in this handbook are not original, and can all be found in the many books and publications that abound in the fields of community water supply and sanitation, epidemiology and Health Impact Assessment. No attempt is made in this handbook to discuss all the issues surrounding the recommended procedures – the relevant literature will provide far greater insight. What does set this handbook apart is the fact that it pulls together the relevant methodology from traditionally remote disciplines, the methodology that is required to find out whether the health of the community improved (or would improve) as a result of the development project. To the best of our knowledge, no such handbook is currently available in South Africa.

This Guideline document is intended for organizations involved in water-related development schemes and policies, such as the Department of Water Affairs and Forestry; Department of Health (Environmental Health); District Municipalities and water service providers, etc.

This handbook was commissioned by the Water Research Commission

The Project team consisted of:

Mr Ian Bailey (Water Environment Health/Umgeni Water)

Inputs were received from the following workshop participants:

Workshop July 2007 at WRC

Dr J Barnes (University Stellenbosch)

Dr J Kvalsvig (University KwaZulu-Natal)

Dr M Ehlers (University Pretoria)

Ms L Archer (Umgeni Water)

Dr N Potgieter (University of the North)

Ms M Steyn (CSIR Environmentek)

Mrs A Moolman (Water Research Commission - Chair)

Special thanks to Bettina Genthe for her initial input and David Still.

Steve Terry and Umgeni Water for the photographs.

Also, Annatjie Moolman for her reviewing of the drafts and tireless enthusiasm for the project.

Design and typesetting by Triple M Design

This guide consists of five parts

Part 1: Introduction

How great is the problem and its relative impact?

Part 2: Health Impact Assessment – What is it?

Discusses the background and general structure for Health Impact Assessment

Part 3: How to do Health Impact Assessment

Provides the procedures and worksheets for Rapid Health Impact Assessment of water development projects

Part 4: Lessons to be learnt

Discusses the Technical, Social and Economic aspects of evaluating the health impacts of water development projects

Part 5: Case Studies

Provides Case Studies of water and sanitation interventions, with performance indicators and examples of the health and behavioural indicators that can be used for evaluation

References

Provides a comprehensive list of source documents and websites

Appendices

Provide blank Health Impact Assessment tables and Observation and Interview Guides to document the process, which can be copied. Also provided on a CD.

Table of contents

Part 1: Introduction	1
How great is the problem and its relative impact?	
Part 2: Health Impact Assessment – What is it?	5
-Health Impact Assessment (HIA) - a new approach	6
• What is Health Impact Assessment?	6
• What can Health Impact Assessment offer?	6
Key principles of Health Impact Assessment	6
Health Impact Assessment procedure	8
Legal responsibility	10
• Environmental Impact Assessment (EIA)	10
Why evaluate health impact?	10
Problem tree – without Health Impact Assessment	11
• Solution tree – with Health Impact Assessment	12
The Health Impact Assessment procedure	13
Health Impact Assessment for development projects	18
Part 3: How to do Health Impact Assessment	19
Health Impact Assessment for Development Projects	20
• Inception of development projects	20
• The purpose of Health Impact Assessment	20
• The hidden costs of development	21
A rapid Health Impact Assessment method	21
Health hazard identification	22
National Health data for hazard identification	22
Health risk assessment	23
• The scope of the impact assessment	23
• What community risk factors are involved?	24
• What environmental risk factors are involved?	27
• Which institutional risk factors should be considered?	29
• Justification of entries into the summary Health Impact Assessment Table	31
• Field/site observations	31
• The overall health risk assessment	32
Measures for health risk management	34
Health opportunities and promotion	37
Percommanded measures for Health Pick Management and Health Promotion	3.8

Part 4: Lessons to be Learnt	40
Design of projects – Engineering for Health	41
• Technical adequacy	41
Operation and Maintenance	41
Social acceptability	42
Community characteristics	42
Knowledge, Attitude, Practice and Belief	42
Participatory action	43
• Economic evaluation	45
• Effectiveness indicators	45
• The cost of risk management versus the costs of health services	46

Part 5: Case Studies	48
• Irrigation and dams	48
Water supply and sanitation schemes	50
Performance indicators for water supply and sanitation	52
Health and Hygiene Evaluation Procedures	57
References	66
Bibilography	67
Abbreviations	68
Appendices	69

User tables and questionnaires appear on the enclosed CD.

PART 1

Introduction





1

Introduction

How great is the problem and its relative impact? What is the solution to the problem?

To answer these questions we need to assess the Health Impacts of water supply and sanitation. In order to do this we need to evaluate and compare Health Impacts by using suitable indicators. The most important question to be answered is will or has the health of a community improved as a result of a water or sanitation intervention or project.

Will or has the health of the community improved?

Was it what the community wanted?

Is it sustainable?

An assessment of the health of a community as a result of a water or sanitation intervention is rarely performed and its success usually implies acceptance by the community and its sustainability. An evaluation of whether it was what the community desired and a measure of its sustainability are also important factors to ensure its long-term success.

Community evaluation is required

It is hoped that this Guideline will act as a training manual for evaluation of water and sanitation interventions. This guide is in four parts with the first giving the background and structure for Health Impact Assessment (HIA), the second giving the Procedures and Worksheets, the third the Technical, Social and Economic aspects and the fourth Case Studies of Water and Sanitation Interventions with examples of health indicators that can be used.

100 children die daily from diarrhoea in South Africa

In South Africa, 17% of the population (8 million people) does not have access to an adequate supply of potable water, and one third of the population (16 million) lacks basic sanitation (March 2006). It is estimated that there are approximately 1,5 million incidences of diarrhoea in children under 5 per year in South Africa, of which 100 die daily. The South African Government and water-related agencies are undertaking a vigorous campaign to provide 'water and sanitation for all' and to eradicate the backlogs by 2010.

Effectiveness of water development interventions

The evaluation of the effectiveness of water development interventions on waterborne and associated diseases is a challenging task, as the linkages between water and health are complex. Many contend that the introduction of, for example a water supply scheme does not necessarily result in improved health. The most important reason for all the international research in this area is that preventable diarrhoea is perceived to be the cause of many deaths worldwide. If the causes of the diarrhoea can be identified and addressed, thousands of lives, especially those of children, would be saved.

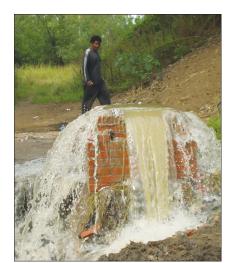
Effects of water development on human health

Many studies on the effects of water development on human health over the past fifty years have

been criticized as to their validity and usefulness. Lack of adequate control, poor project design, many confounding variables, cultural bias, health indicator recall, health indicator definition and failure to analyse by age have been cited as rendering study results meaningless. Eminent researchers in the field, are equally skeptical. While instinctively it is accepted that water and sanitation do improve health, there are many opinions as to how and why.

Improved assessment procedures are required

It has been proved that the quantity of water for example has a greater impact on health than water quality. An improvement to the proximity of water supply (piped water) not only increases the quantity of water used, but also removes the need for water



storage and therefore contamination. This may in turn reduce contamination and the proliferation of disease bearing vectors such as mosquitoes and flies. Owing to the varied results of international research in this field, the limited resources available in South Africa and the urgency, improved assessment procedures are required to:

- Establish the extent of diarrhoeal disease in the rural areas.
- Identify the risk factors to diarrhoeal disease, which are extensively associated with the water. resources and which are expected to improve with investment in water and sanitation schemes.
- Establish health criteria for consideration in the auditing of water supply schemes.

Lessons learnt from the implementation of community water and sanitation

Many valuable lessons have been learnt already from the implementation of community water and sanitation interventions such as:

- Taps need to be situated inside the house to prevent storage of any sort, which leads to contamination.
- The provision of an adequate drainage system for the sullage (grey water).
- Hygiene education be addressed as the causes of diarrhoea would appear to be correlated with many basic hygiene procedures, rather than water quality.
- A post-construction audit process be introduced to assess all aspects of the scheme to assess its effectiveness in operation, appropriateness and its effect on health.

The aim of this Guideline

Given the difficulties experienced with epidemiological studies as outlined above it would seem that observational/behavioural methods are better suited. Behavioural components should not be dismissed as cultural idiosyncrasies as there is no Public Health Intervention without behavioural change. The aims of this Guideline are:

 The development of a generalized Health Impact Assessment Guideline and evaluation for use in assessing health factors in water resource interventions. Some water utilities are already using a series of key performance indicators to evaluate and monitor rural supply schemes. Current indicators include service performance, financial performance and accountability indicators. Health related

- indicators would be a valuable addition to such a protocol.
- The use of patterns of hygiene behaviour for adding to the list of key performance indicators. The WHO Minimum Evaluation Procedure suggests that health improvements are the culmination of a long chain of events from the original construction, through operation and use, which in turn permit changes in hygiene behaviour and possible prevention of disease. Patterns of hygiene behaviour may prove more reliable than measuring disease rates or water quality.
- The use of this guide should assist in defining feasible, acceptable and cost-effective approaches to delivering the water resources intervention or "Engineering for Public Health".



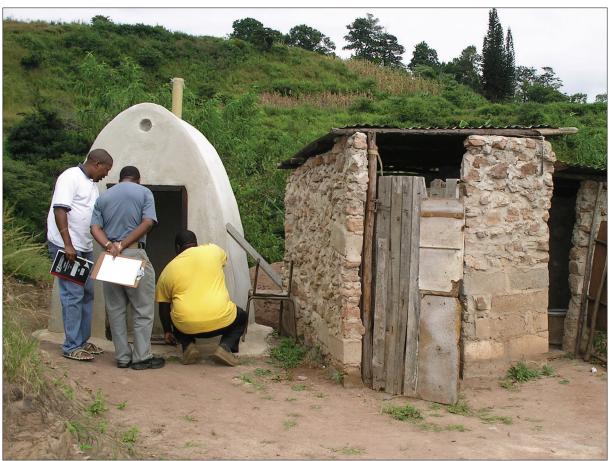


PART 2

Health Impact Assessment – What is it?







Health Impact Assessment – a new approach

HIA represents a new approach to the evaluation of social, economic and environmental policies, programmes and projects.

What is Health Impact Assessment?

HIA can be defined as:

• the estimation of the effects of a specified action on the health of a defined population

Its purpose is:

- to assess the potential health impacts positive and negative of policies, programmes and projects; and
- to improve the quality of public policy decision making through recommendations to enhance predicted positive health impacts and minimise negative ones.

What can Health Impact Assessment offer?

HIA's strength lies in providing a tool, which enables informed policy decisions to be made based on a valid assessment of their potential health impacts, at the same time adding health awareness to policy making at every level. In the longer term it has the potential to make concern for improving public health the norm and a routine part of all public policy development.

HIA has much in common with the more established Environmental Impact Assessment and although it draws on a number of traditional research methods, it is more than just a monitoring and evaluation tool. HIA aims to provide a practical framework for identifying health impacts and ways of addressing them. It is also based on a number of key principles:

Key principles of Health Impact Assessment

- a social model of health and well-being
- an explicit focus on equity and social justice
- a multidisciplinary, participatory approach
- the use of qualitative as well as quantitative evidence
- explicit values and openness to public scrutiny

A social model of health and well being

HIA is based on a holistic, social model of health, which recognises that the well-being of individuals and communities is determined by a wide range of economic, social and environmental influences as well as by heredity and health care:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease.

Health

"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" – World Health Organization, 1967

This definition is much broader than (but encompasses) the traditional medical model which defines health as freedom from disease which can be diagnosed clinically and is concerned primarily with treating symptoms rather than their underlying causes.

Human health should be seen in a physical, social, behavioural, and ecological context. In this holistic model, promotion of health plays a prominent part. Health promotion activities should involve other sectors making a contribution to health, such as education, food, nutrition, and environment *World Health Organization, 1987*

Health determinants that can be used in HIA

- biological factors, e.g. age, gender and ethnicity
- personal or family circumstances and lifestyles, e.g. education, income, employment, risk taking behaviour, diet, exercise, recreation and leisure
- the social environment, e.g. culture, social networks and community participation
- physical environment, e.g. air quality, housing, crime, civic design and transport
- public services, e.g. access to services and quality of services

A multidisciplinary, participatory approach

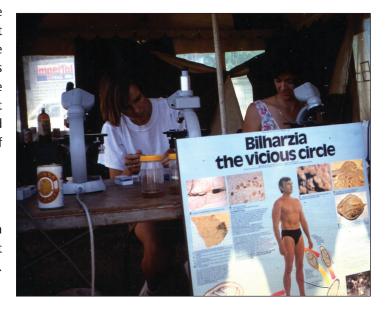
HIA is not the preserve of any one disciplinary group. Instead, it draws on the experience and expertise of a wide range of stakeholders, who are involved throughout the process. These may include professionals with knowledge relevant to the issues being addressed, key decision makers, relevant voluntary organisations and perhaps most importantly representatives of the communities whose lives will be affected by the policy.

The use of qualitative as well as quantitative evidence

HIA involves an evaluation of the quantitative, scientific evidence where it exists, but also recognises the importance of more qualitative information. This may include the opinions, experience and expectations of those people most directly affected by public policies and tries to balance the various types of evidence.

Openness to public scrutiny

To be consistent with the focus on equity, HIA also aims to be transparent and open to public scrutiny throughout.



How can HIA be applied?

Ideally, HIA should be applied prospectively (before policy, programme or project implementation) to ensure that steps are taken, at the planning stage, to maximise positive health impacts and to minimise the negative effects. In practice it is not always possible to do this so HIA may also be carried out concurrently (during the implementation stage) or retrospectively (after it has finished) in order to inform the ongoing development of existing work.

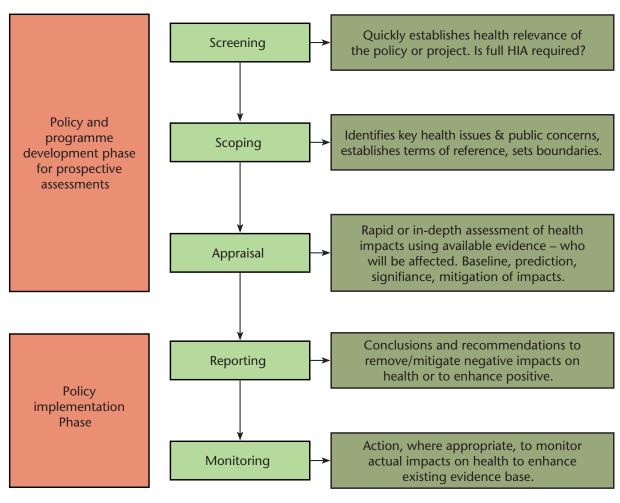
At what level is HIA appropriate?

HIA can be undertaken in varying levels of detail as a rapid process or a more in-depth study depending on the resources available and it can be applied to policies, programmes or projects. It is a requirement or a strong recommendation that HIA is addressed in many government initiatives.

HIA methodologies

There is no one definitive methodology for HIA although several toolkits are currently being developed.

Health Impact Assessment procedure



Adapted from WHO HIA website/tools

The usages of Health Impact Assessment

HIA can be used as a tool in many different areas. There are many benefits in using HIA data apart from its main use, such as the following:

- Inclusion of human health in Environmental Impact Assessement (EIA).
- Risk assessment.
- Healthy public policy.
- Retrospective versus prospective assessment.
- Environmental Health Impact Assessment.
- Social Impact Assessment.
- Environmental epidemiology.
- Retrospective evaluation of the effectiveness of medical interventions at community level.
- Strategic assessment.
- Hazard mapping.
- Health inequalities impact assessment.

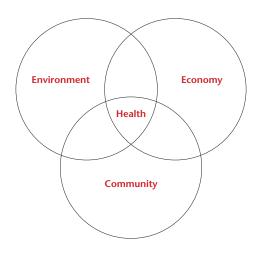
The most effective HIA is a prospective activity in the planning stages of a project. In other words the health impacts associated with the interventions have not occurred at the time of assessment. A further distinction can be made between interventions where health changes are an explicit objective, such as a vaccination programme, and where health changes are not explicitly part of the objectives, such as a sanitation project.

The primary focus of many HIA is the second alternative. Typically, 90-95% of national budgets and development assistance is spent on interventions that lie outside the health sector and decisions are made without regard for the broad range of health impacts. HIA provides a tool for informing those decisions.

Examples of non-health sector interventions with health implications are: transport policy, siting of waste facilities, use of chemicals in food production, mining, energy, education policy, dam construction, wetland conservation.

There is considerable overlap with Environmental Impact Assessment and Social Impact Assessment. There is no clear definition about where health concerns end and where environmental or social concerns begin. The different users of the term Health Impact Assessment may choose to set the boundaries in different places.





Legal responsibility

The White Paper for the Transformation of the Health System in South Africa 2000

- 11.1 EVERY SOUTH AFRICAN HAS THE RIGHT TO A LIVING AND WORKING ENVIRONMENT WHICH IS NOT DETRIMENTAL TO HIS/HER HEALTH AND WELL-BEING
- 11.4 ENVIRONMENTAL HEALTH SERVICES SHOULD CONTRIBUTE POSITIVELY TOWARDS SUSTAINABLE PHYSICAL AND SOCIO- ECONOMIC DEVELOPMENT

The health sector has an important role to play in promoting interaction between health, the environment and overall development.

- 11.4.1 Implementation strategies
- (a) Ensuring Health Impact Assessment

An integrated health and environmental approach should be included in the Environmental Impact Assessment of all major development projects

Department of Health 2000

Environmental Impact Assessment

EIA is an established procedure, well known in most countries of the world, increasingly required by law and by international development agencies. Yet EIA does not cover all dimensions of human health. It often overlooks the cross-cutting nature of health.

Consequently, HIA has emerged as an instrument for ensuring healthy public policy. It is also an instrument to generate health safeguards in the planning and design stages of development projects. It may be integrated with other forms of impact assessment, or stand-alone.

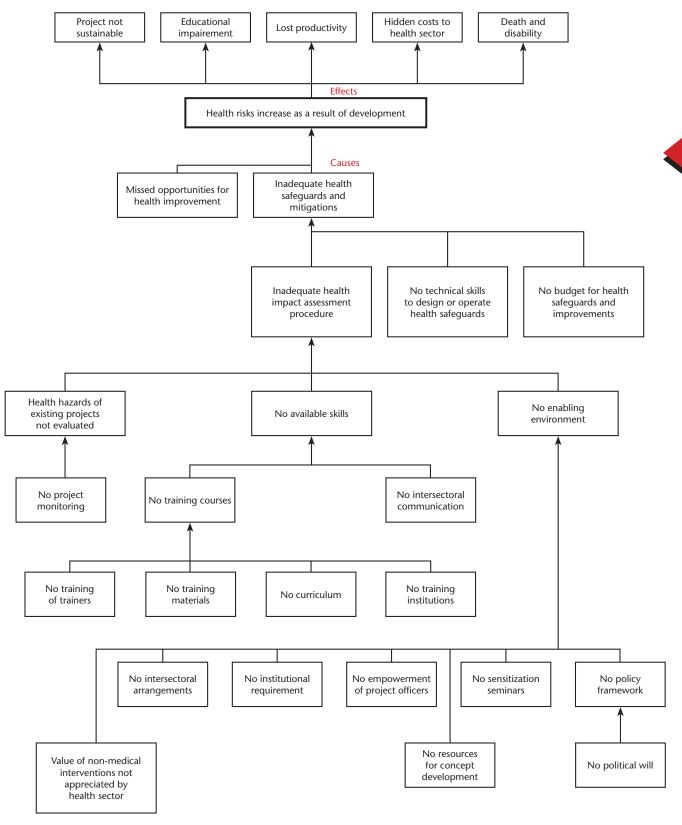
Why evaluate Health Impact?

The sustainability of development can only be ensured if the full range of potential impacts are appraised in a timely fashion and actions proceed from that appraisal.

The potential impacts of development are numerous and cut across many specialist concerns. Most development projects, from whatever sector, are expected to have a beneficial effect on human health by increasing the resources available for food, education, employment, water supplies, sanitation, and health services.

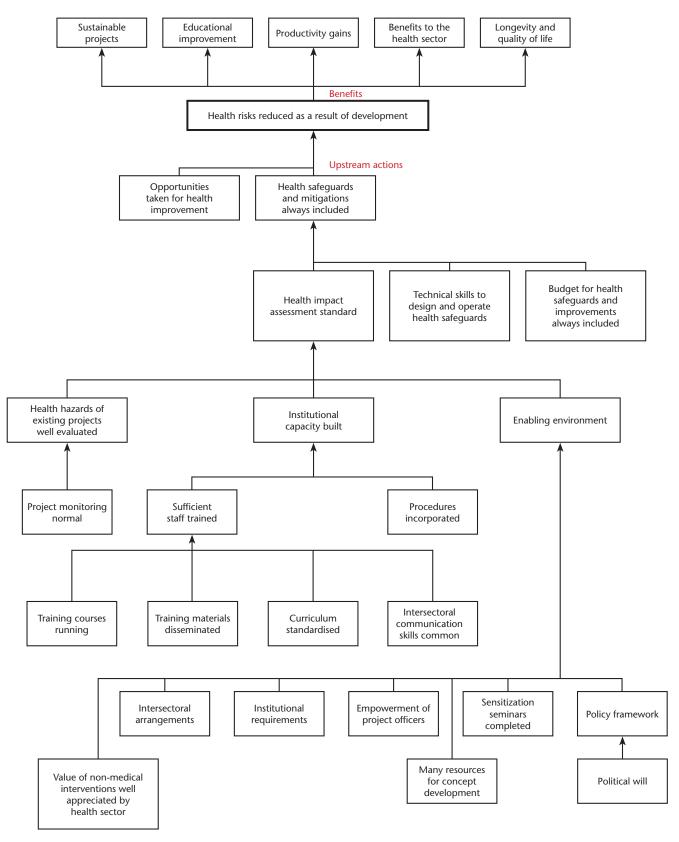
Development can sometimes cause indirect impacts including unexpected negative effects on health. Many of these can be avoided by careful planning. Adverse health impacts are most likely to affect the most vulnerable social groups. The poor, ethnic and religious minorities, women, children and the elderly may be at especially increased risk; they tend to have poorer access to resources or lack the political power which may be necessary to promote their interests. This may serve to amplify the overall adverse effect. Such impacts reduce the social and economic benefits expected from the development and transfer hidden costs to the health sector.

Problem tree - without HIA



Source: Bos et al., WHO 2003

Solution tree - with HIA



Source: Bos et al, WHO 2003 8.

Health appraisal offers an opportunity to identify health hazards in advance. Often only minor actions may be required to safeguard health. The actions may vary from ensuring that the health authorities are informed of development plans, to specific requests for major planning changes, such as settlement siting. In addition, the analysis of health risk provides an opportunity to incorporate health-promoting activities in the development project.

- Identifying health hazards
- · Assessing health risks associated with the project
- Proposing measures for health risk management
- Considering opportunities for the improvement of health
- Defining time frames

The Health Impact Assessment procedure

1. Screening

Identifying if an HIA should occur

A checklist

- Description of the policy.
- Questioning whether the policy affects any of the selected determinants of health.
- Questioning whether the policy affects the whole population or selected vulnerable groups by gender.
- Deciding whether the policy should undergo an HIA.

In practice screening is not used –often - not because it is not a good idea, but because of resource and organisational issues. Screening only works when there is organisational commitment to HIA – where management allow the time and resource to screen each project, policy or programme. Typically, the decision to carry out an HIA comes about in other ways:

- A significant project is occurring, and someone (the developer, the public, local public health, planners, etc.) think an HIA would be a good idea.
- Funding is received for carrying out an HIA, and a single topic is chosen.
- To do an HIA on all major issues.

Often, components of the screening process are used in the methods described above, but they are not systematic.

2. Scoping

Identifying what to do and how to do it

Scoping sets the boundaries for, and considers how the HIA appraisal stage should be undertaken.

- Who will do the HIA and who will be in charge?
- Are there any specialists or practitioners who could be involved?
- What monitoring and evaluation of the HIA will occur?
- When does the HIA have to be done by, to influence key decision makers (often influencing the choice of whether a rapid or comprehensive HIA is undertaken)?
- Setting and agreeing the aims and objectives of the HIA.

Also, terms of reference for the HIA are often drawn up at this stage to clarify exactly what is expected from whom.

Rapid HIA

Refers to the appraisal stage, which is carried out quickly (often only in days/weeks) with a limited amount of resource. However the preparation required for stakeholder consultation, searching and compiling evidence and writing the recommendations should not be underestimated.

Comprehensive HIA

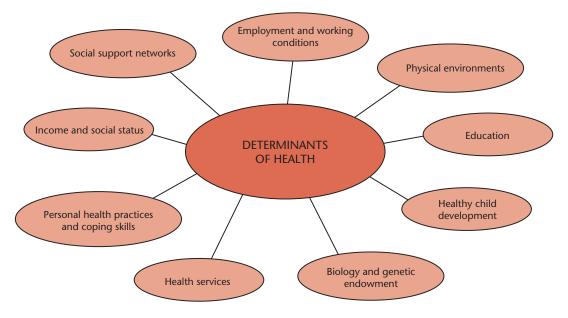
An extensive appraisal stage, where new information is generated, significant literature reviews undertaken and comprehensive involvement of stakeholders often occurs. May take months or longer.

3. Appraisal Identifying health hazards and considering evidence of impact

This is where a large amount of HIA work is carried out. Normally within an HIA the best available qualitative and quantitative evidence would be collated using a range of methods, including interviews, focus groups, surveys and community profiling (to name a few).

Information is gathered on a number of determinants of health – social and economic issues, wildlife and biodiversity also specific health hazards and diseases in the project area. The relationships between the determinants of health and key elements of the proposal are investigated (often laid out in a table/grid like fashion for clarity).

The important health risks are ranked and such identification and description of the type and size of health impacts (both positive and negative) is typical of the appraisal stage of HIA. Focussing on how different groups of people and communities are affected by the proposal is carried out. Often, in other HIA case studies, facilitated workshops are held to appraise the evidence. Drawing together a wide range of stakeholders allows different views to emerge and helps develop partnership working.



Source: Canadian Handbook on Health Impact Assessment 2004

4. Reporting

Developing recommendations to reduce hazards and/or improve health.

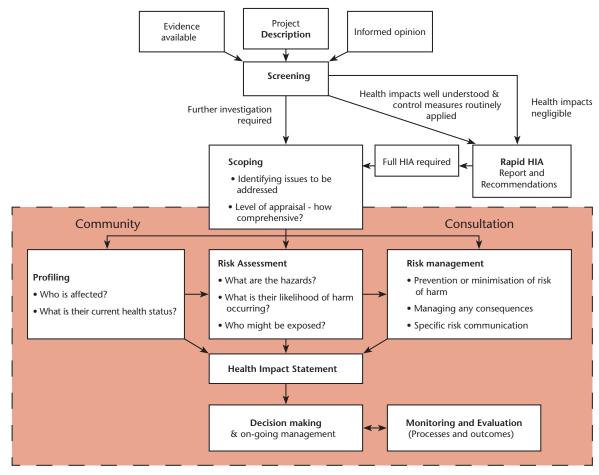
A key output of HIA is the set of recommended changes to the development proposal or mitigation.

5. Monitoring **Evaluation and monitoring**

Evaluating whether the HIA has influenced the decision making process (and the subsequent proposal) is an important component of HIA. As with any intervention, evaluation is required to see if it has worked. Evaluation of the HIA process is also useful to answer why the HIA worked (or not).

Monitoring the implementation of the proposal is critical to ensure that any recommendations that decision-makers agreed to, actually occur. Longer term monitoring of the health of populations is sometimes a component of larger proposals. This long term monitoring can be used to see if the predictions made during the appraisal were accurate, and to see if the health, or health promoting behaviours, of the community have improved.

Flow chart of the health impact assessment process



Source: Health Impact Assessment Guidelines Commonwealth of Australia 2001

Examples of potential health impacts that may need to be considered during HIA

General environmental aspects that may impact on health:

- Increased demand and/or improvements to public infrastructure (water supply, sewerage, waste management, health, education, other government services).
- Altered risk from acute hazards, e.g. fires, spills during transport or handling of materials.
- Altered motor vehicle traffic leading to changed risk of injury or air pollution.
- Damage to vulnerable ecosystems that are of importance to human health.
- Impact on health or amenity through changes to odour, noise, dust, insects, shade, vibration, light spill, etc. (including what are historically referred to as environmental health nuisances).
- Encourage/discourage healthy forms of physical activity, e.g. walking or cycling.

Potential impacts on physical health:

- Communicable/infectious diseases (e.g. HIV/AIDS, cholera, mosquito-borne disease).
- Non-communicable diseases cardiovascular disease, cancer, asthma, etc.
- Exacerbation of existing conditions.
- Injury, e.g. from trauma.

Social impacts which have a health effect:

- Employment opportunities created/lost.
- Effect on local government revenues.
- 'Spin-off' effects on local industry
- Changes in social conditions (way of life) or demographic changes leading to health consequences, e.g. the likelihood of changes to alcohol consumption in an area.
- Mental and emotional wellbeing of a community (e.g. is the development likely to cause or allay stress, anxiety, nuisance, discomfort).
- Altered (improved or decreased) opportunity for recreation or socialisation.
- Increased or decreased isolation of individuals.
- Shifts of population into or out of the affected area and the health impacts of such shifts.

Special populations that may need to be considered include:

- The elderly
- The disabled
- Persons of low socio-economic status
- Children born and unborn
- Immuno-compromised
- Cultural minorities

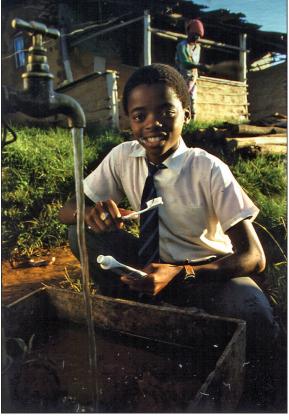
Specific examination of the demography of the area under consideration may reveal other groups to be considered.

Source: Birley LSTM 1995

Examples	Examples of key factors that determine health			
Fixed	Social and	Lifestyle &	Access to services	Environment
	economic	Behaviours		
• Genes	• Poverty	• Diet	• Education	Air quality
• Sex	• Employment	Physical activity	Health services	• Noise
Ageing	Social exclusion	• Smoking	Social services	Housing
	Community	• Alcohol	• Transport	Water quality
	structure and	• Sexual behaviour	• Leisure	Social environment
	infrastructure	• Drugs		Risk of injury
		• Coping skills		Weather extremes,
		HIV Status		e.g. heat, cold
				floods, droughts
				• Disease vectors,
				e.g. mosquitoes







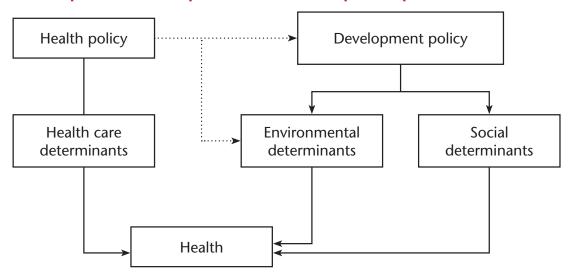
Rapid Health Impact Assessment for Development Projects

All development projects affect health

World Health Organisation

The HIA flow charts on pages 8 and 15 show the full process, however shorted versions or Rapid HIA are more appropriate for development projects, especially for water, sanitation, hygiene education or irrigation projects. They use existing data and specialist studies are not required. The key aim is to decide if the interventions actually improve the health of the community in order to evaluate, monitor and compare the various implementations. In this way policy can be modified for optimum health benefits with the limited number of resources available.

The impact of health policies and development policies on health status



Source: Birley LSTM 1995



PART 3

How to do Health Impact Assessment









Health Impact Assessment for Development Projects

- Development projects can change health risks.
- Plans and operations can be modified to promote health.
- A simple method of assessment can be used.
- Intersectoral discussion and collaboration are possible

The following sections will explain how:

- To identify health hazards associated with a given development project.
- To illustrate that development projects can change health risks.
- To illustrate that development plans and operations can be modified to promote health.
- To provide a simple method for assessing health impact and gain first hand experience of its use.
- To illustrate the types of intervention that may be required to protect and promote health.

In addition it is important to have some background in the technical, social and economic aspects in order to be able to understand and assess a full HIA study.

- To understand the language of technical, social and economic analysis.
- To decide what kind of analyses of health impacts have been or could be made.
- To identify what the technical options for interventions are, and whether their costs and financial benefits have been effectively addressed in recommendations.
- To assess what health effects have been included.
- To compare social and net economic costs of different strategies to manage health outcomes.
- To decide if any assumptions made are realistic.

Inception of development projects

There are two crucial moments in the project cycle when human health must be considered:

- In the prefeasibility phase, when the Terms of Reference for the feasibility study and the EIA are formulated. Possible health implications of the project are sure to be considered if an HIA is included in this phase. As a consequence, salient health issues will be discussed during appraisal.
- At the time of negotiating the allocation of funds.
 In this phase it will be decided which health safeguards and health promotional measures will be implemented. It will also be determined to what extent the health sector will be given a role in the next phases.

The purpose of HIA in Development Projects

HIA is an examination of a development project, in order to assess whether it will affect the health of a community.

- Safeguards and mitigating (harm reducing) measures can then be proposed to protect the health of
 that community. In addition, the assessment can consider opportunities for health promotion within
 the community related to the specific project.
- Development projects are designed to confer benefits on a community, including improved standards of living and health. Sometimes, however, there are unintended and indirect negative effects. These may affect the environment, the socio-economic condition or the health status of some community groups.
- Increases in ill-health represent a hidden cost of the project which, ultimately, must be borne by the health sector.
- HIA provides an early warning, so that decision-makers can review and modify project plans, design and operations by negotiation.

The hidden costs of development

- Ill-health caused by a development project can lead to reduced productivity, school absenteeism, increased consumption of medicine and more visits to health centres. Such hidden costs can be reduced or avoided by safeguarding human health. Therefore, it is necessary to assess the potential health impacts of new projects.
- Assessment also has its costs. In order to contain the costs of assessment, a rapid HIA should precede a
 full HIA. The rapid HIA is cheap. The full HIA is expensive, time-consuming and may not be required.

A rapid HIA method

There are many possible methods of assessing health impact and many questions to consider. It is helpful to divide the assessment into smaller and more manageable components. The method will involve:

- Identifying health hazards.
- Assessing health risks associated with the project.
- Proposing measures for health risk management.
- Considering opportunities for the improvement of health.

Definitions

A health hazard is an agent that may cause harm.

A **health risk** is a measure of likelihood that an identified hazard causes harm to a particular group of people at a particular time and place.

A **health impact** is a change of health risk associated with a project.

Examples

- 1. The malaria parasite is a health hazard in the tropics. However, malaria may be a very small health risk in the middle of many large cities in the tropics, because the mosquitoes that transmit the infection are likely to be absent.
- 2. Electricity is a health hazard in the workplace.
 - An environmental factor, a live wire.
 - A vulnerable person who does not appreciate the hazard and whose behaviour causes contact with the wire.
 - A lack of health protection, no warning signs.

Health hazard identification

Health hazards can be classified in many different ways. It is proposed you use the following categories Some examples are given on pages 25 and 27:

- Agents of communicable diseases.
- Agents/causes of non-communicable diseases.
- Causes of malnutrition.
- Causes of injury.
- Causes of psychosocial disorders.

What kind of health hazards are commonly associated with the kind of development project that you are assessing?

How could you determine whether the development project is in a location associated with particular health hazards?

List the health hazards associated with your project and classify them under the different categories.

National Health data for hazard identification

You will need Regional or District Health data available from the Department of Health and a map of the area. The map should enable you to locate the project within a particular health district or sub district although you may also need a map indicating district health administrative boundaries and the location of health centres, towns and villages. Also note the location of major geographical features such as rivers, forests, roads and mountains.

The health data should enable you to determine some of the health hazards that are currently important in the project area. Indicators of health hazards are the disease prevalence rate (the number of disease cases divided by the total number of people at risk at one particular moment in time) or disease incidence (the number of new cases over a given period, usually a year). In order to obtain the total number of people at risk, you will require population data. You may also have access to published research findings based on limited, but more accurate surveys which may be available through the Provincial Departments of Health websites.

You may wish to interview health officers from the district where the project is located.

Does the information that is available to you inform you about the particular health hazards in the project location? Remember, your challenge is to decide what the health data will look like in the future, when the project has been developed or what it was like before it was in operation.

NB Consider under-reporting.

Try and establish the reliability of the data by comparing with other data or ask someone who might know.

Health risk assessment

In order to assess the health risks you will need to:

- 1. Decide the scope of the assessment. This includes geographical boundaries, time boundaries and affected communities.
- 2. Break the assessment into its main components:
 - Community risk factors are characteristics of a community or community group, which determine its vulnerability to a health hazard.
 - Environmental risk factors are characteristics of the physic or social environment, which determine the level of exposure of a community to a health hazard.
 - **Institutional risk factors** are the strengths and weaknesses of public and private institutions that play a role in protecting health prior to the project.
- 3. Identify key questions to ask about each component.

The scope of the impact assessment

You need to decide what to include and what not to include in the assessment. For this decision you need to consult other line ministries and members of the public. Let's concentrate on what to include. You should consider:

1. The number of years into the future or past

Some diseases spread slowly through a community and may not become a widespread cause of ill-health for many years. Others spread very quickly and are an immediate cause of ill-health.

Examples:

Malaria is a "fast" disease but Schistosomiasis is a "slow" disease.

Malnutrition can be a long-term problem, leading to stunting, or a short-term problem, leading to starvation.

2. The geographic boundaries

The health hazards associated with a development project may move considerable distances. They may be carried by wind, water or infected hosts.

Examples:

Some insects that transmit disease-causing agents can migrate several hundreds of kilometres downwind

Migrant workers carrying disease agents can come from and go to different countries eg cholera.

You will make an assessment of the changes in health associated with your project by filling in the outline Table.

Vulnerable community groups

There are many different community groups associated with the project. They include the people living in and around the project area, people resettled from other areas and temporary migrants. They are among the stakeholders, because they have a stake, or interest, in the project.

Vulnerable communities include any community group that is affected by the project. Development projects change the size and composition of the community through changed birth and death rates, displacement, resettlement and/or migration. The change in composition may be reflected in the gender balance, age composition and/or ethnicity. The health risk management recommendations that will be appraised next need to take these changes into account.

Changes in Community groups

The communities that will be associated with the project during the construction and operational phases may be different from the communities already settled in the area before the start of the project.

Examples

Subsistence farmers and their dependants may be displaced from the development project site. Many may be offered resettlement or reemployment on the scheme, the rest will move into uninhabited areas, or drift into town.

Groups providing support services such as teachers, health workers and their dependents may move into the project area.

Settlers such as cash crop farmers plus dependants may be settled on new agricultural schemes. These will include members of displaced communities and some town dwellers.

Construction workers are usually males who are separated from their partners for many months or even several years.

Camp followers are attracted to construction sites and include food sellers and sex workers plus their dependants.

Fishing folk plus dependants may be attracted to new dams.

Migrant labourers will establish a circulation pattern linked to cropping and harvesting seasons.



What characteristics of the groups in the above examples would make them vulnerable to health hazards?

What community risk factors are involved?

The vulnerability of community groups to health hazards depends on risk factors, such as poverty, behaviour, education, occupation and immunity. Behaviour will depend partly on their knowledge and their attitudes. The community risk factors vary with each hazard and each community group.

Examples:

Practising irrigated agriculture in Africa may lead to occupational exposure to Schistosomiasis.

Believing that malaria is caused by bad air may reduce the desire to use nets as a protection from mosquitoes.

Driving a vehicle without proper training increases vulnerability to traffic injuries. Refer to Part 2 for other examples pages 16 and 17.



Types of health hazard		
Health hazard	Examples and causes	
Communicable disease	Malaria, diarrhoea, respiratory infection	
Non-communicable disease	Poisoning, pollution, dust	
Malnutrition	Reduced subsistence foods (inadequate food intake or micronutrient deficiencies)	
Injury	Traffic crashes and collisions, occupational injury, violence	
Mental disorder	Substance abuse, stress	

Examples of health problems with slow and fast onset		
Health categories	Slow onset	Fast onset
Communicable disease	Filariasis, schistosomiasis, hookworm, ascariasis, tuberculosis	Malaria, enteric infections, dengue, meningitis, pneumonia
Non-communicable disease	Dust induced lung disease, chronic poisoning, cancers	Acute poisoning
Malnutrition	Goitre, blindness, stunting	Wasting (starvation)
Injury	White finger, hearing and sight loss posture	Trauma (crushing, breaking, wounding), burns, eye damage

Health impact classification		
Classification Interpretation		
A	Significant health impacts, mitigation difficult or requires special budget	
В	Significant health impacts, mitigation practical without special budget	
С	No significant health impacts to local communities and affected populations	

Source: Birley LSTM 1995





Summary health impact assessment table				
Project title				
Location				
Community group	Community group			
Health hazards	Community risk factors	Environmental risk factors	Institutional risk factors (prior to the project)	Expected change in health risks attributable to the project

Source: Bos et al., WHO 2003, part 3

Summarize the community risk factors of the group in your Table for each health hazard and enter this information in column 2. For example, if the health hazard of a farming community is the introduction of agricultural machinery, then you might write in the corresponding box of column 2: "increased risk of injury for lack of training."





Examples of vulnerable communities whose health may be changed by a project		
All projects Vulnerable groups	Health hazards or exposure	
Construction workers	Communicable disease, non-communicable disease, injury	
Camp followers	Communicable disease, HIV/AIDS	
Project workforce	Communicable disease, non-communicable disease, injury	
Local dependents	Malnutrition – household members are affected to different degrees	
Distant dependents	Malnutrition in the labour reserve, communicable disease imported by circulating labour	
Casual labour	Communicable disease	
Women employees	Injury due to violence; miscarriage, fetal damage	
Child labour	Communicable disease, injury	
Displaced communities	Malnutrition due to loss of subsistence: stress	
Resettled communities	Communicable disease, malnutrition, stress	
Periphery	Non-communicable disease due to pollution; malnutrition	
Downstream/downwind	Non-communicable disease due to pollution	

Source: Birley LSTM 1995

What environmental risk factors are involved?

For each of the health hazards that you have identified, the next step is to determine the nature of the environmental risk factors (both social and physical), as illustrated in the examples below.

1. Communicable diseases, e.g.:

Will the development project change the environment and increase vector breeding sites? Will the transmission season be extended?

Water-borne diseases are associated with poor domestic water supply and sanitation. Will there be changed exposure to contaminated water?

2. Non-communicable diseases, e.g.:

Will there be changed exposure to toxic chemicals?

3. Injury, e.g.:

Will there be any fast moving machinery, including vehicles?

4. Malnutrition, e.g.:

How will the project affect subsistence crops and the division of entitlements within the household?

5. Psychosocial disorder, e.g.:

Is it likely social disruption could lead to a change in the suicide rate? Whilst some environmental risk factors are localized, others are widespread.

Questions

What will you need to say about environmental risk factors in your report?

What could you learn from visiting existing and similar development projects in the region?

What do the feasibility study report or other documents tell you about the changing environment?

Document your answers for the final report and complete the third column of the Table on page 26 with a summary. For example, if the hazard is an agent of communicable disease: "decreased breeding sites for malaria vector mosquitoes."

The project may create new hazardous environments or modify existing ones.

Examples may include faulty chemical storage facilities, contaminated drinking water, new habitats promoting disease vectors, industrial sites as sources of pollution, unguarded machinery, contaminated food supplies, poor siting of human settlements, social environments conducive to promiscuity, alcoholism and violence.

The associated environmental risk factors may vary geographically and temporally.

Geographical changes

The effect of physical changes can extend over considerable distances away from the project, especially downstream or downwind. The construction of a dam, for example, may affect the flood patterns downstream, with repercussions for agricultural production and nutritional status.

Temporal changes

Exposure to health hazards can vary seasonally and over a longer time scale.

Many vector-borne diseases, such as malaria, constitute a seasonal health risk with transmission associated with certain climatic conditions

Questions

Does your report describe the geographical distribution of health risks?

In this connection, does it discuss downstream effects?

Does it identify potential zones of transmission or exposure?

Does the report give details of the seasonal distribution of health risks?

Does the report distinguish the risk factors in construction, early operation (first five years)

and late operation (5-20 years)?

Examples of hazardous environmental factors include locations, habitats and structures, such as:

- Proximity to industrial plan;
- Being within flight range of the breeding sites of insect vectors;
- A domestic water supply downstream of excreta, or industrial waste, disposal;
- Poorly maintained irrigation ditches which serve as vector breeding sites;
- Swamp habitats of the schistosomiasis snail host;
- Poorly maintained roads with numerous trafic crashes and collisions.

Which institutional risk factors should be considered?

This component of the assessment asks the question: what is currently being done to protect health?

Many government and non-governmental agencies carry responsibility for protecting human health. In addition to the health services, which are the responsibility of the Department of Health, the areas covered by government agencies may include:

Occupational safety (Department of Labour).

Pesticide use (Department of Agriculture).

Pollution monitoring and control (Department Environment Affairs).

Water supply and sanitation (Department Water Affairs).

Ministries or agencies responsible for health-related issues can be judged in terms of:

Capacity, i.e. the resources available in terms of staff and equipment.

Capability, i.e. the knowledge, skills and experience of the staff and the procedural framework that allows them to operate as efficiently as possible.

Jurisdiction, i.e. their power to regulate or control a particular aspect of the project.

These factors above constitute the institutional risk factors

Jurisdiction is important because in projects for the development of natural resources there may be areas where institutional responsibility and accountability are lacking. Existing institutional risk factors provide an indicator for the ability of health protection agencies to cope with the present and future demands in the project area.

Questions

What do the various agencies concerned do at present to protect the health of your community group from the health hazards you have identified?

Many different institutions have a responsibility for health. In the specific context of your project, a number of government and non-governmental institutions are concerned with health. Their capacity, capability and jurisdiction is variable.

Does the report identify all the relevant institutions?

Does it identify their strengths and weaknesses?

Does the report identify needs for extra health services that could arise from the project?

There are important variations in the quality and coverage of delivery of curative services, preventive

services and health promotion. The following examples illustrate some of the problems, which you will need to consider for your report.

Examples

Drug supplies for rural health centres are often irregular and insufficient. The ability to diagnose the cause of ill health accurately is limited by the level of training of health personnel and the diagnostic tools available.

Health surveillance: health centres usually supply monthly statistical summaries to district headquarters.

These summaries are often inaccurate, as the purpose for collecting the data is seldom made clear to the staff.

National health statistics are published annually but may be several years out-of-date.

National disease control organisations are often under-funded and city-based. Their vehicles may not be functional when they are needed.

Local disease control may be the responsibility of a primary health care system that lacks the resources, staff and expertise to concentrate on many diseases.

Health education units may focus on only family planning.

National planning procedures for considering health impact and for acting on information generated by impact assessment may not yet be well developed.

There may be no communication between the development planners, the local health service, or the local authorities public works department responsible for water supply and sanitation.

Project planners may be relying on the health sector to deal with health problems and may not be giving these problems any attention themselves.

Ouestions

For each of the health hazards you identified write notes on these factors for your report and include a summary in column 4 of the Table on page 26. For example: "limited stocks of anti-malarial drugs in health clinics, no preventive measures in operation."

Health Services

- Do the project communities have realistic access to health services based on distance, cost and time to travel, opening times, drug supplies, trained personnel availability, gender and age?
- Are health centre diagnostic facilities functional, quality controlled, timely?
- Do peripheral health centres have functional water supplies and latrines as well as drug supplies and diagnostic equipment and are personnel paid regularly?
- Do health statistics travel down the line to the periphery as well as up to regional headquarters?
- Is routine health surveillance data accurate, calculated as rates, displayed in graphs, used in decision-making, of comparative or absolute value?
- Are the health services oriented towards monitoring and responding to new needs?

Capacity Building

- Do the capabilities of the environment protection agency require strengthening?
- Do the capabilities of the health service require strengthening?
- Do the capabilities of the office responsible for occupational health and safety require strengthening?
- Is the Department of Health represented in the HIA procedure, project design or approval process?

Justification of entries into the summary Health Impact Assessment Table On

Having examined the three main components of HIA, you should be able to justify the summary points made in the Table on page 26 and your evidence will have different degrees of validity, such as:

Calculable.

Estimable.

Definite but not measurable.

Speculative.

Anecdotal.

Hypothetical.



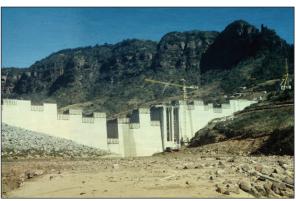
Field/site observations

The aims of the field observations are:

- To assist you to understand the concept of a feasibility study and visualize the issues to look for in an area where a project is proposed.
- To observe features of the community, environment and health services, which may be relevant to the HIA.
- To collect data from key informants representing the health service, the community, irrigation boards, Departments of Agriculture and Forestry and Water Affairs.
- The methods used will be interviews with key informants and direct observations.
- The key informants include both officials and members of the community.
- Each interview should last 20-30 minutes. Key informants are likely to present biased views based on their own perspective and interests. A comparison will be necessary between what different key informants tell you.
- Remember that the community may be culturally different from your own.
- Aspects of their culture may affect their vulnerability.
- Now make a list of questions to ask on the site visit that will help to fill some of the gaps in your information.

Source: Bos et al., WHO 2003, part 3





The overall health risk assessment

The next step in the health risk assessment procedure is a synthesis of the findings for each health hazard into combined health risk factors. These findings need to be weighted for their relative importance.

Some risk factors related to an individual hazard may reinforce one another (for example, migration of non-immune resettlers into an area where irrigation development has boosted malaria vector populations). Others may cancel each other out (the risk of injury due to the introduction of agricultural machinery will be reduced if there is sufficient capacity within the agricultural extension services to launch an effective training programme).

A correct synthesis will depend on your capacity to weigh the various risk factors attributed to each hazard and to consider the ways in which these risks may interact in an integrated picture. Ask an expert if you are unsure.

Questions

- Does your report provide sound arguments to support the synthesis of risk factors for each hazard?
- Is the report transparent about the weighting and integration of risk factors for each hazard?
- The HIA report should acknowledge that different community groups will be affected in different ways. It should present changes in health risks for each community group whose health status will be significantly affected by the proposed project.
- The report should also acknowledge that risks will vary for each community group during the different project phases.
- The final conclusions should sum up the risks and rank them for each project phase.
- And, does the overall health risk assessment provide a solid basis for accurate conclusions concerning the health impact of the project?

Examples

During the construction phase of an agricultural development project the construction workforce and the camp followers will be especially exposed to sexually transmitted diseases and HIV/AIDS. It is expected that during the operational phase this community group will have dispersed and will have been replaced by a community of intended project beneficiaries. The stable family structure of this farming community will result in a reduced exposure to these diseases.

They may, however, be especially exposed to agricultural pesticide poisoning. In large projects, temporary health facilities may be constructed for expatriate workers. The availability of these facilities will counterbalance certain health risks identified to affect the project beneficiaries during the operational phase, provided they can be kept operational by the local authorities.

In addition to specific health risks, the conclusions should also highlight the health benefits and opportunities for health promotion that are associated with each project phase.

Project Title	mmary Initial Hea		dment Multipurpose (SM)	IM) Project	
Project Type Location Date of assessment		Small Water Impoundment Multipurpose (SWIM) Project. Multipurpose irrigation, with watershed management.			
Community group		Farmers and farm lab	oourers		
Health hazard Community vulnerability		Environmental factors	Health service capability	Health risk (associated with project)	
Malaria	Susceptibility is high and labour migration may introduce the parasite	Vector habitat depends on reforestation. Increasing use of pesticides	Curative – drug resistance Surveillance – localized Vector control – in response to outbreaks	Variable. Check in ten years after significant reforestation	
Schistosomiasis	Leading cause of local morbidity, severe cases reported	Snail populations surveyed at project site	Curative snail control and surveillance, but staff shortage	High risk, but mitigation practical	
Encephalitis	Low, no cases reported	Vectors probable	Supportive treatment	Very low and unchanged	
Pesticide poisoning	High – poor eduction	Increasing agricultural usage of extremely toxic substances	Vigilance probably low	Moderate, increasing mitigation required	
Malnutrition	High but reducing with improved income	Intensive agriculture Fisheries	High	Moderate, check that fish consumption increases as planned	
Injury	Low	Draught animal power	Casualty ward	Low, unchanged	
Enteric and other helminth infections	High prevalence	Tube wells, open defecation, no domestic water supply components	Curative	Unchanged, but domestic water supply and sanitation required	
HIV/AIDS	Moderate, increasing cases of rape		Low, anti-retrovirals required	Increasing	

Source: Birley LSTM 1995

Measures for health risk management

Do any of the following interventions apply to your project?

Irrigation and drainage channel design and maintenance:

The purpose is to improve water flow, prevent leakage and stagnation and prevent vector breeding. This requires action during the design, operation and maintenance phases. Maintenance is cheap if the community participates, but it may be difficult to motivate the community.

Sanitation:

The purpose is to ensure safe excreta disposal, prevent contamination of open water and prevent vector breeding and fly breeding. This requires action during the construction stage.

Proper storage of chemicals and training of workers:

The purpose is to prevent poisoning. This requires action during the construction and operation phases and during any spraying for malaria, etc. Stores for pesticides and other chemicals can be constructed cheaply.

Improved drug distribution:

The purpose is to cure individuals who become clinically ill. It may be difficult to recruit trained staff and to maintain drug supplies.

Settlement location:

The purpose is to reduce exposure to localized health hazards. Action is required at the design phase. This can be cheap if government owns the land and socially acceptable if distance between the settlement and the workplace is not excessive.

Health education and awareness building.

This is an important part of any project.

Examples of behavioural changes that reduce exposure in a health hazard include:

- maintenance or irrigation ditches to prevent mosquito breeding;
- avoiding the swamp habitat of the schistosomiasis snail host;
- boiling contaminated drinking water;
- defensive driving.

Too often, HIA reports simply state "the project is acceptable if health services are improved".

Such a general recommendation provides no useful information for planners to improve the project design or operation. It places the responsibility for dealing with the additional burden of disease entirely on the health services.

Specific recommendations should address the health risks that have been identified, for a particular project phase and for a particular community or community group:

- Health safeguards divert the risk entirely and prevent a negative health impact to occur.
- Mitigating measures minimize, to the extent possible, any predicted adverse health effects.
- Health promotional measures add value to a project by making use of health opportunities offered by the project.

The recommendations that achieve these outcomes may be:

- Technical design and operational changes.
- Regulations.
- Economic tools (subsidies, taxes, incentives).
- Strengthening of health services.

The first three types of recommendations are unlikely to be sufficient, so strengthening of health services will normally be required, taking into account the new community health status that is forecast. In this part of the appraisal you will need to pay a great deal of attention to the economic evaluation of recommended measures as economic arguments are likely to carry a lot of weight.

Sort your proposed interventions into the following categories:

Cheap or expensive.

Easy or difficult.

Socially acceptable or not acceptable.

Maintenance cheap or expensive.

Example: Environmental Management for Vector Control:

- Permanent modification to the environment to inhibit vector breeding.
- Repetitive actions, such as weed removal, to inhibit vector breeding.
- Changes in human behaviour and habitation which reduce breeding or exposure
- Timely assessment of the health hazards to ensure that design changes can be incorporated in project plans and operations.

Some elements of the first three are discussed in WHO's "Manual on Environmental Management for Mosquito Control". They include the following measures:

- Drainage of urban and rural settlements and irrigation systems.
- Alteration of river, reservoir and other water impoundment levels by sluicing and flushing.
- Alteration of water salinity.
- Removal of favourable and planting of unfavourable vegetation for vector breeding.
- Changing conditions of exposure to sunlight and shade.
- Land filling and levelling.
- Alternate irrigation and drying of fields.
- Destruction of water-filled containers; screening of tanks.
- Improvements in sanitation, sewerage and solid waste management systems.
- Siting human settlements 2 km or more from vector sources.
- Land zonation.
- Using livestock as diversionary hosts.
- Using bednets and house screens.
- Management of irrigation water.
- Avoidance of infested water for domestic use or recreation.

Part 3 • How to do Health Impact Assessment

Rapid HIA procedure • Hazard identification • Risk assessment • **Risk management** • Health opportunities • Recommendations

Other Examples

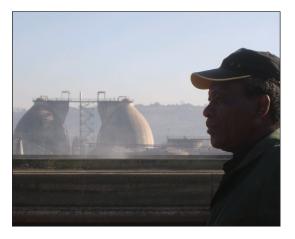
- Resettlement sites could be located at least 2 km from vector breeding sites, such as the forest margin.
- Irrigation ditches could be self-draining when not in use.
- A proportion of water taxes could be retained under local control and used for project maintenance.
- Footbridges could be provided where schistosomiasis vectors are present.
- Irrigation could be intensive and synchronous to inhibit vectors.
- Water storage containers could be fitted with tight lids.
- Intermittent piped water supply could be avoided.
- Solid waste could be prevented from collecting rainwater or blocking drains.
- Septic tanks could be properly sealed.
- Downstream sections of dammed rivers could be regularly flushed.











Health opportunities and promotion

You have taken the first step towards safeguarding the health of the affected communities.

The health of these communities could, however, also be further improved.

Please consider whether additional aspects of design could be modified or added, that would substantially improve the community health status.

This approach is referred to as promoting **health opportunities** to distinguish it from **health risk management**.

- A classic example is the incorporation of a drinking water supply component in an irrigation project. This may not have been included in the original design and the community may have to rely on unsafe sources of water.
- Housing improvement, such as screening of windows to keep out insects, is another example.
- Training of the workforce from the community can leave them with many important skills.

List the health opportunities that you can identify for your project.

Were realistic health risk management measures and opportunities proposed and justified in relation to health risks as well as to costs, acceptability and ease?

Use the results of the field/site inspections, further research and reading and consultation with local experts to complete and justify your conclusions. Consider and list possible safeguards and mitigating measures that may be included in the project to avoid the increased risks listed in your Table and to improve the health of your community group.





Recommended measures for health risk management and health promotion

Summary of recommendations				
Recommendation	1.	2.	3.	
Safeguard or health promotional measure				
Project stage				
Community addressed				
Technical adequacy				
Social acceptability				
Economic soundness				

Source: Bos et al., WHO 2003, part 3

Complete the summary table above and as far as possible take into consideration the factors listed as outlined on the top of page 36. These terms are explained in more depth in Part 4. Some examples are given in the Table on the next page.





Project stage	Surveillance and monitoring	Health service provision	Safety provision and preventive measures	Obtaining advice from the health sector about:
Location	Site specific health hazards, general health status of local communities, ten most common causes of morbidity and mortality, location and functioning of health services	Access to health services	Settlement siting	Disease foci, vector biology
Planning and design	Improve routine health service surveillance by: retraining, health information system, laboratory services	Health centre, trained personnel, drug supply, equipment maintenance, housing for health workers, casualty/emergency unit	OHS planning, traffic routing, environmental management	Communicable disease control, environmental management for vector control, environmental manipulation, environmental health
Construction	Occupational Health and Safety (OHS) monitoring, environmental health: water supply, sanitary system, drug supply, vector monitoring	STD/HIV clinic, distribution of condoms, health training, casualty/ emergency unit, vector and other communicable disease control	Safety measures consistent with local economy, OHS training, traffic routing	Communicable disease control, environmental health Non-communicable diseases HIV/AIDS
Operation	Routine medical examination, action oriented disease trend analysis, child growth monitoring, OHS monitoring, infant mortality monitoring, vector monitoring, casualty rates	Health education, immunization, obstetrics, training traditional health workers, food supplement programme, casualty/ emergency unit, access to health service outside working hours, vector and other communicable disease control	OHS implementation environmental management	Communicable disease control, environmental management for vector control, environmental manipulation, environmental health human behaviour modification
Opportunities for project enhancement	Health information system, diagnostic/ laboratory services	Healthy work force is more productive and vice versa	Safer working methods, training, injury compensation	Intersectoral collaboration

Source: Birley LSTM 1995

PART 4

Lessons to be learnt





Design of projects – ENGINEERING FOR HEALTH

Any project design recommendation must satisfy:

- 1. Technical adequacy
- 2. Social acceptability
- 3. Economic soundness

1. Technical adequacy

The technical adequacy of the recommendations depends on:

- Design.
- Operation and maintenance implications.
- Geo-physical setting.
- Climate.
- Local availability of materials.

For example, cement lining of irrigation canals can prevent seepage and the formation of stagnant pools where mosquito vectors breed. Cement may, however, crack if it is of low quality or stressed by seismic activity. Experience has shown that mosquito breeding sites resulting from cracked cement-lined canals are more localized and more limited in number, but their average surface area tends to be larger. Some species of Anopheles mosquitoes prefer to breed in rock pools that appear in rivers during the dry season or in canals during periods when irrigation is interrupted.

Flushing small rivers and canals has proven effective in eliminating vector breeding. Managing malaria risks in this way is, however, only possible in areas where there is enough water available even in the dry season. The design of flushing devices (e.g. automatic syphons) should therefore allow for an optimal flushing schedule within the limitations of water availability.

Operation and Maintenance

The design of recommended measures may be excellent, but their performance can still be jeopardized by poor operation and maintenance or poor estimation of resources needed.

Examples

Water contact patterns are an important behavioural determinant of infections with water-based parasites such as schistosomal worms. Electric pumps for irrigation water distribution can reduce water contact and, thereby, infection risk. They depend, however, on a reliable supply of electricity. An unreliable supply of piped drinking water can lead to domestic storage in receptacles that are likely to be contaminated and cause gastro-enteritis.

Ambulances can strengthen health services, but only if properly maintained and if fuel availability is guaranteed.

Monitoring and surveillance

Surveillance is sometimes defined as systematic measurement of variables and processes for the purpose of establishing a time trend. Monitoring, by contrast, is collecting data for analysis and action.

2. Social acceptability

Community characteristics

- The technical adequacy of measures recommended in the HIA report becomes irrelevant if the measures meet with resistance from the local or affected communities.
- Community characteristics may change as a result of the project.
- The acceptance level for certain interventions may be different in a changed community.

Question: Were demographic changes explicitly considered in the formulation of HIA recommendations?

Examples

Residual spraying of houses for vector control has suffered as much from decreasing social acceptance as it has from technical problems such as insecticide resistance.

Improvement of the socio-economic status of the community will result in increased buying power including access to health services, medicine and personal protection measures.

Knowledge, Attitude, Practice and Belief

Consideration of social acceptability is essential in the formulation of recommendations and performance of a Knowledge, Attitude and Practice (KAP) study of affected communities is necessary as part of the HIA. Based on the information resulting from KAP studies and on demographic forecasting, specific social issues can be tackled in detail, and the social acceptability of recommended measures can be appraised.

Knowledge

Did you investigate the knowledge of the community when designing certain improvements? For instance, there is little point in relying on the labeling of pesticides as a safeguard against poisoning if the illiteracy rate in the community is high.

Attitude

In rural communities in many parts of the world, the attitude towards sexuality hampers open discussions on sexual issues. This reduces, for example, the effectiveness of measures with groups at risk from HIV/AIDS. Any political agendas should also be taken into careful consideration.

Practice

Agricultural practices may be based on deep-rooted traditions. They may also imply important health risks. To change these practices with the objective of reducing exposure to health hazards, it is essential to understand their background. Also, the identity of the person proposing the changes is important: an agricultural extension worker is likely to have more credibility with local farmers than the community health worker when it comes to recommending changed agricultural practices aimed to reduce health risks.

Belief

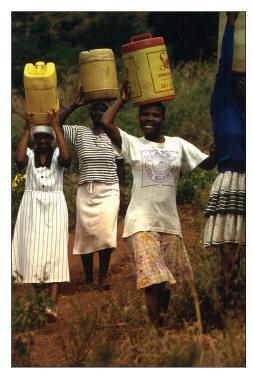
Religious convictions may hamper the impact of health safeguards and health promotional measures. For certain religious groups, for example, western medicine is not compatible with their beliefs. Strengthening of health services along the principles of western medicine will not have significant impact as long as this belief persists.

A full KAP study of affected communities performed as part of the HIA will support the outcome used in the design of recommended measures

Participatory action

Affected communities should be involved in a HIA. This can have a beneficial effect on the sense of ownership and on social acceptability of measures that are subsequently recommended for health protection and promotion. Designing measures in such a way that the community can also participate in their implementation will contribute to the success and the sustainability of the interventions.

- It is good practice to involve an anthropologist or cultural geographer in the process to ensure a professional approach to participatory action and to use the Public Health Action Support Team (PHAST) techniques.
- Community members can play an important role not only in the implementation of recommended measures, but also in the monitoring of health risk indicators during the construction and early operation phases.
- Was there an input from appropriate social scientists into the development of recommended measures?
- Are the recommended measures participatory in nature?







Some participat	ory methods		
Method	Advantages	Disadvantages	Alternatives/Keep in mind
Public meetings	The audience will contain many different interests, with different levels of understanding and sympathy	 It is difficult to keep to a fixed agenda Only a few people get a chance to have a say Possible language problems 	 Identify and meet key interests informally Run workshop sessions for different interest groups Bring people together after the workshop sessions in a report-back seminar Use interpreter
Formal survey	 Questionnaires, studies and in-depth discussion groups can be a good way to start the participation process 	Surveys are insufficient on their own	 Surveys require expert design and piloting Surveyors need training Survey design can be part of a process which leads to action
Consultative committee	Some focus for decision- making will be necessary in anything beyond a simple consultation process	 Even if a committee is elected or drawn from key interest groups, it may not be a channel for reaching most people People invited to join a committee may feel uncomfortable about being seen as representatives 	 The committee can help to plan the participation process Surveys, workshops and informal meetings can identify other people who may become actively involved especially community leaders A range of groups working on different issues
Working through NGOs/CBOs	 Voluntary bodies such as NGOs and CBOs are a major route to communities of interest and may have people and resources to contribute to the participation process They have a wealth of experience and are essential allies 	Voluntary bodies are not "the community"	 There will be many small community groups who are not part of the more formalized voluntary sector Voluntary groups have their own agendas; they are not neutral
Participatory Rapid Appraisal (PRA)	If done well, the work belongs to the local people	Care needs to be exercised in choosing appropriate tools	A range of tools are available (see the following section)

Source: Cotton WHO 2000

3. Economic evaluation

Economics is the third aspect that needs attention in the appraisal of recommended measures. The HIA report should contain a section in which the economic evaluation of the recommended measures is properly presented. Appraisal of the economic aspects will help ensure that:

- The cost estimate of recommended measures is complete.
- The recommended measures are affordable.
- The most cost-effective option has been chosen and there are no hidden costs.
- The costs of the recommended measures are significantly offset by the cost that would have been incurred to the health sector in case no measures were taken.

The next section will briefly explain an economic evaluation of an HIA report. You may need the help of a health economist to look at it in more detail.

For a comprehensive economic evaluation of the various options for health risk management measures, **cost-effectiveness analysis** is the preferred method.

Other sectors, such as the irrigation department in the agriculture sector, will use **cost-benefit** analysis in their project planning. In that case the benefit is always expressed in monetary terms. In the case of measures with dual (health and agricultural) benefits, it is acceptable to make the two methods compatible by estimating their agricultural benefits in monetary terms and to deduct this amount from the costs incurred by the measures, before completing the cost-effectiveness analysis.

An HIA report should include an economic evaluation of the recommended measures.

Effectiveness indicators

Each intervention aimed at safeguarding or promoting health has an output that leads to an outcome. The outcome, in turn, leads to an impact on community health status. The choice of an effectiveness indicator from this sequence of events is important for the sensitivity of the cost/effectiveness analysis.

For very similar interventions, output can be the indicator, while for more disparate interventions the impact on community health status may be the first common denominator. The further down the chain of events, the greater the risk of confounding factors.

Example:

In a malaria vector control programme based on indoor spraying of houses with a residual insecticide, the output is the number of houses sprayed, the outcome is the reduced vector lifespan and the impact is a reduced incidence of malaria. Considering the effectiveness indicator selected, has the estimate of effectiveness been carried out satisfactorily

The cost of risk management versus the costs of health services

One of the main goals of HIA is to ensure that "hidden" costs for the health sector, incurred by a development project, are eliminated by the incorporation of health safeguards and health promotional measures in the project design and operation. It is therefore worth estimating to what extent the costs of recommended risk management measures are offset by the reduction in health services costs.

Sometimes, the assessment overshoots its target – it may be possible that the resources required to carry out the recommended measures allow for important improvements and efficiencies in the health services to be achieved, particularly if synergies or economies of scale are brought into the equation. There have also been cases where project designers disguised project components (for instance, a drainage system) as externalities such as health safeguards, in order to boost the Internal Rate of Return of a project. The HIA report should provide a final check of this point, if only to exclude that this could be used as a counter argument in the negotiations.

Careful consideration should be given to the extent to which the costs of the health safeguards mirror the savings made in health service delivery.







PART 5

Case Studies







Irrigation and dams

Irrigation Health Haza	Irrigation Health Hazards and the Project Stage at which Safeguards may be required			
Project stage	Health hazard	Examples and causes		
Location	Communicable Disease	Contact with desease foci, domestic water supply contamination		
	Malnutrition	Loss of subsistence crops		
	Injury	Floods, drowning		
Planning and Design	Communicable Disease	Sanitary waste disposal		
	Non-Communicable Disease	Water pollution		
Construction	Communicable Disease	Poor sanitation, water supply and food hygiene, HIV/STD, exposure to vectors		
	Non-Communicable Disease	Inadequate occupational safety measures		
	Injury	Inadequate occupational safety measures		
Operation	Communicable Disease	Creation of vector habitats, water and vector exposure, wastewater reuse in agriculture		
	Non-Communicable Disease	Leachates in drinking water, mineral salt uptake by food crops		

Source: Birley LSTM 1995

Irrigation projects cause profound ecological change that often encourages mosquito breeding. No one knows how much malaria is associated with irrigation, but many of the world's most efficient malaria vectors breed in or around rice fields. Unfortunately, malaria almost invariable increases as a result of surface irrigation.

General environmental changes brought about by irrigation practices which may have effects on health

- Simplification of the habitat.
- Increase in the area of surface water.
- A rise in the water table.
- Changes in the rate of water flow.
- A modification of the microclimate.
- Urban development.

Much malaria associated with irrigation is due to untidy practices and various simple measures could be taken to prevent outbreaks.

- Efficient water use is often the key to reduced vector breeding.
- The key to efficient water use and the maintenance of water channels lies with the division of responsibility and financing between the individual, the community, the irrigation system management and the government.

Building of dams for irrigation in areas where the black fly is present increases the transmission of onchocerciases.

The public health importance of schistosomiasis in irrigation projects has often been emphasised. It arises as an occupational hazard of farmers, a recreational hazard of bathers and a domestic hazard, e.g. fetching water and washing, etc. The severity of the disease is a function of the intensity of infection. Intensity increases where communities are exposed to contaminated water for extended periods. Irrigation extends water contact leading to increasing intensity of infection.



Example

Traditionally the annual Nile flood was seasonal. The construction of the Upper Aswan Dam in the 1960s

enabled perennial irrigation, reduced the silt load in the river and encouraged the growth of aquatic plants. The environmental changes extended the habitat for smail vectors. Farmers spent a longer time during the year in contact with water. The prevalence of *Schistosoma haematobium* in the Aswan area increased form 13% in 1937 to 32% in 1972. Following programmes of health education, chemotherapy and snail control, prevalence of *S.haematobium* in the Aswan area was reduced to 12% by 1982.

An assessment of the health impact of water resource dvelopement: Example				
Summary Health Impact Assessment Table				
Location				
Project Type		Hydropower and irr	igation	
Date of Assessment				
Project Stage				
Health hazards	Community vulnerability	Environmental factors	Capability of health service and other agencies	Health risk associated with the project
Malaria falciparum	High in all communities	High transmission potential	Low	High and increasing
Schistosomiasis (haematobium and mansoni)	Especially important for children	High	Low	High and increasing
Sleeping sickness	High for poachers, loggers and gatherers	High transmission potential	Low	Low, but increasing among secondary communities
Filariasis	Low	Low	Low	Low, but monitor at five yearly intervals
Dengue	Low	Low	Low	Low, monitor circulation between town and project

Source: Birley LSTM 1995

Water supply and sanitation schemes

Water supply and drainage				
Project stage	Health hazard	Examples and causes		
Location	Communicable Disease	Distance to domestic water supply, water contact diseases		
Planning and Design	Communicable Disease	Inappropriate water supply and drainage systems		
	Non-Communicable Disease	Pollution, mineral deficiency		
Operation	Communicable Disease	Lack of health education, poor maintenance, poor protection, poor drainage		

Refuse disposal and sanitation				
Project stage	Health hazard	Examples and causes		
Location	Communicable Disease	Contamination of groundwater by pathogens		
	Non-Communicable Disease	Contamination of groundwater by chemicals		
Planning and Design	Communicable Disease	Soil contamination by excreta, pit latrine design		
Construction	Injury	Inadequate occupational safety		
Operation	Communicable Disease	Creation of vector habitats by poor solid waste disposal		
	Non-Communicable Disease	Air and water pollution, skin disorders		
	Injury	Explosive gases, hand and leg injuries, lower back pain for refuse workers		

Source: Birley LSTM 1995

Despite the intentions of planners, communities will use irrigation water for domestic purposes, especially during the dry season. They may also defecate on the banks of canals and use the water for anal cleansing.

Well planned irrigation can complement domestic water provision, especially in the dry season.

Wastewater containing pathogens and heavy metals is increasingly being used for irrigation. Correlations between wastewater use and children's diarrhoea have been observed. The development of appropriate safety measures is of current concern.

Communities	Hepatitis	Typhoid, cholera	Ascariasis	Hookworm infection	Tapeworm infection	Schisto- somiasis
Members of rural households	•	•	•	•		•
Sewage plant workers	•	•	•	•		
Farm workers		•	•			•
Crop handlers		•	•			•
Recreational users		•	•	•		•
Peripheral communities		•	•	•		•
Urban vegetable and fruit consumers, consumers inside and outside of the country		•	•			
Consumers of meat from cattle raised on pastures irrigated with wastewater					•	

Source: Birley LSTM 1995



Performance indicators for water supply and sanitation

Indicator	Components or data	Formula	Application
1. User satisfaction	User satisfaction surveys for water and sanitation	% of interviewees satisfied with service operation, classified by degree of satisfaction	All
2. Five main Operation and Maintenance (O&M) problems	User satisfaction surveys for water and sanitation	% of interviewees identifying each of the five most frequently listed problems for both water supply and sanitation	All
3. Roles and responsibilites	 Who is perceived by the users to be responsible for O&M of water and sanitation services? Who actually carries out O&M work? 	See Note 3 and Note 1	All
4. Care and use of facilites	Evidence of facilities being used and looked after	See Note 4	All
5. Approaching formal institutions and outcome	 Number of times formal institutions are approached for assistance in a given period Number of successful outcomes 	Number of successful outcomes divided by the number of approaches during the period	Centralized
6. Complaints dealt with	 Number of actions dealing with complaints in a given period Number of complaints logged in a given period 	Number of actions dealing with complaints in a given period divided by the number of complaints logged in that period	Centralized

Source: Cotton WHO 2000

Notes on Users' opinions and satisfaction indicators

The opinions of the users of services and their level of satisfaction provide essential information about the operation of that service. These indicators are central to the whole concept of evaluating the performance of a service, whether it be managed centrally or by the local community; nevertheless, there has been surprising reluctance to find out and act on users' perceptions. It is important to include the views of the urban poor and rural people, as well as those in middle- and high-income areas of cities. There are a number of important indicators in several of the following Tables which make use of the user satisfaction survey. (see Health and Hygiene Evaluation procedure on page 57)

- 1. **User satisfaction:** Surveys are fundamental (especially participatory information gathering). In addition to qualitative classification, for example into "very satisfied", "satisfied"... "poor", etc., it is possible to explore in detail particular aspects of the service which the users find to be lacking. This approach is essential in rural and periurban areas, where there is much less access to any formal complaints system; information can be also gathered from middle- and high-income consumers.
- 2. **Five main O&M problems:** It is important to maximize the information obtained from user satisfaction surveys through a problem analysis, which identifies key areas for action. Key informant interviewing on page 59 suggests some lines of enquiry to establish key O&M problems as perceived by the users.
- 3. **Roles and responsibilites:** This is an important issue for both centrally managed and community-managed systems
 - Institutional responsibilities are often very complex, which contributes to making the complaints procedures long and frustrating. It is therefore very informative to elicit views about where responsibility lies in the eyes of the users. For example, a common response in many cases is that 'the government' is responsible, with no clear picture of the different institutions of 'government'.
 - In systems, which have tried to establish user involvement in O&M, it is important to establish whether such approaches are understood and are operational in the eyes of the users, or whether they remain theoretical ideas, which have not been effectively implemented.
 - For example, in a Village-Level Operation and Maintenance (VLOM) system, a functioning water committee should exist for each community water supply. Use participatory approaches to explore whether caretakers have been identified and how effective they are in the view of the users. This gives a primary indication of whether or not the system is working according to its original concept. Similar indicators can be applied to the different levels of the VLOM system; for example, there might be an 'area mechanic' responsible for a number of water supplies. Other performance indicators, e.g. Functioning supply points and Reliability can be used to point to the effectiveness of the personnel involved.
- 4. Care and use of facilites: One of the key user-related issues for O&M is to engender a sense of care and ownership, regardless of whether management is by the household, the community or a central institution. It is common to look for evidence of misuse, e.g. broken standposts. However, it is important to complement assessments of the physical facilities by exploring why this is the case (using participatory information-gathering). There may be evidence of latrines not being used, such as excreta in open drains or on the ground, or being used for other purposes such as storage sheds. This raises fundamental issues about the use and appropriateness of sanitation systems whose implications are much wider than O&M. This is where participatory methods which explore the underlying reasons are particularly useful and powerful.

- 5. **Approaching formal institutions and outcome:** This indicates how responsive the institutions are from the point of view of the user. Note that it is common for representations to be made by intermediaries such as NGOs and local action groups, and also through the local elected political representatives.
- 6. Complaints dealt with: A system of receiving and acting upon complaints is an essential part of consumer services; utilities, line agencies and municipalities all require a system for receiving and logging complaints. These systems may exist without being well publicized, and are hence little known to the consumers. For example, whether to complain in writing, or by telephone, or by paying a personal visit to an office. If so, where is the office and what are its opening times? Complaints may be received by locally elected representatives, who keep a formal complaints register. Local community-based management also requires mechanisms for reporting problems; these are much more likely to be verbal and informal. Having received and logged a complaint, the key point is that remedial action is taken. This can be checked by having a simple bookkeeping system, which allows the action to be recorded against the complaint. The register needs to be subject to external audit on a regular basis.

Note: Indicators 5 and 6 apply to both water supply and sanitation.







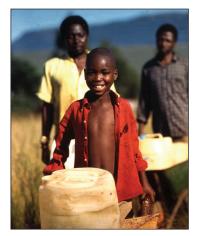
Irrigation and dams • Water supply and sanitation • **Performance Indicators** • Health and Hygiene Evaluation

Levels of service indicators				
Indicator	Components or data	Formula	Application	
Access to functioning water supply points/ latrines/septic tanks	Number that are functioningTotal number in a defined locality	Number functioning divided by the total number in the locality	All	
2. Cleanliness of public/ shared facilities	User satisfaction survey for communal water supply and sanitation facilities	% interviewees satisfied with the operation, classified by the degree of satisfaction	Centralized community-managed	
3. Reliability	Functioning time: the number of days in a month or year when the water supply and sanitation service is functioning	Functioning time during a particular period divided by the duration of that period	All	
4. Piped water supply continuity	Average number of hours per day of supply to a locality over a given period (e.g. number of days)	Average number of hours of supply per day divided by 24	Centralized community- managed	
5. Water quality	 Bacteriological water quality survey for <i>E. coli</i> at the supply points in a defined locality Number of supply points at which the <i>E. coli</i> is greater than the target value set for the locality 	Number of supply points at which <i>E. coli</i> samples are greater than the target value divided by the total number of supply points for which samples are taken	All	
6. Flow rating	 Discharge as measured from the tap/pump Design discharge: either discharge as measured after commissioning the scheme, or theoretical discharge used in the scheme design 	Actual discharge from tap or handpump by the design discharge	All	
	Numbers refer to Notes	on next page		

Source: Cotton WHO 2000







Notes on Levels of service indicators

Levels of service are of great importance to users; they relate the perceived benefits of the level of service they receive to the cost they have to pay. An overall picture needs to be built up both from objective assessments of performance and from the opinions of users.

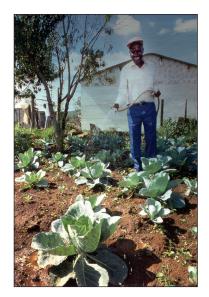
- 1. Access to functioning water supply points, etc: Access to an adequate service is a key objective of water and sanitation provision. Participatory information-gathering can identify communal services such as stand posts, hand pumps and communal latrines which are not working. Household interviews can explore the functioning of individual septic tanks and latrines and service connections. As well as being direct indicators of the O&M status, these also point to the actual benefits which the service provides, because they relate to the proportion of the population utilizing the systems.
- 2. Cleanliness of public/shared facilities: One of the major problems with communal facilities is that they tend not to be clean. This is particularly important for sanitation, as nobody wants to use dirty latrines. Cleaning is probably the single most important aspect of operation; taking ownership may improve matters.
- 3. **Reliability:** Unreliability is the most serious concern for users, e.g. breakdowns leading to lack of water or sanitation. For hand pump water supplies or on-plot latrines, this is a relatively straightforward indicator as the problem-causing malfunction can usually be readily identified. However, for piped systems there are many different components within the system which may cause failure of water to come out of a tap. Different components will have different reliability; the indicator can be applied to individual components of more complex systems. This enables 'weak points' to be highlighted. The reliability indicator may also point to problems with the system of reporting, diagnosing and repairing faults.
- 4. Piped water supply continuity: A characteristic of many water supplies is that they are discontinuous, with water being delivered to the taps for only a few hours each day. This affects both urban and rural supplies and is particularly acute in the dry season. Information needs to be gathered from users and from bulk supply records which may be available centrally. The problem which arises is how to compute the average number of hours per day of water supplied; ideally, it should be an annual average using data from each day of the year in the different supply zones to account for weekly, monthly and seasonal variations in supply and consumption. Efforts should be made to obtain a value for at least each month of the year. A high value of the indicator implies good continuity of supply.
- 5. Water quality: While water quality surveillance can indicate O&M problems, the diagnosis of cause and effect within treatment and distribution systems is difficult. WHO (1983) suggests that "it is not unusual that a protected spring without chlorination contains 5-10 *E. coli* per 100 ml, and in an unprotected spring the number might exceed 100."The target number of E.coli per 100 ml has to be set locally, taking account of local water quality standards and objectives. Note that this does not indicate the quality of water consumed within the home, which is really what is important.
- 6. Flow rating: The discharge from a sample of hand pumps and/or taps can be measured by counting how many strokes of the pump it takes to fill a bucket of known volume. This can then be compared with the recommended hand pump ratings (Arlosoroff et al., 1987). For piped systems, the values obtained should be compared with measurements taken immediately after the system has been commissioned, if available, otherwise design flow could be used. However, errors in hydraulic design do occur and a stand post may never be capable of delivering its anticipated design flow. Low discharges may indicate leaks or breakages in the pipelines, and incorrect valve settings. Pressure measurements at taps using a simple Bourdon pressure gauge can also be used to identify a problem.

Health and Hygiene Evaluation Procedures

Guides/interpreters from the local community will be necessary to accompany the team.

1 Healthwalk (systematic walkabout)

This method is an adaptation of transect (a method within Participatory Rural Appraisal, PRA) in which the study team spends one to four hours (depending on distances to be covered) walking across the study site(s) in a meandering fashion. It is essential for the study team, in pairs or triplets (not too many in a group to avoid attracting unnecessary attention), to absorb the atmosphere of the study site as they walk up and down the roads and foot-paths, stopping to greet people of all walks of life. Spontaneous informal conversations and discussions on water and sanitation related topics may be held,



especially where people normally gather: for example, at the water source(s), village/town square, or the market place. This may provide opportunities to identify key-informants, individuals who are particularly knowledgeable about issues relevant to your study, for example, handpump attendants, traditional healers, midwifes, water committee chairpersons, and so on (see "Key-informant Interviewing" page 59 no 3).

Purpose

- To familiarize yourself with the physical context in which hygiene practices occur: This is often done with specific objectives, such as finding out where the water sources are and to assess levels of visible faecal contamination in the public as well as the domestic environment.
- To observe how people behave and interact with each other as they go about their daily routines of fetching water, tilling the land, caring for young children, tending animals, cleaning their homes and courtyards, and so on:

This provides some insight into what people do every day, for instance.

Tool

A checklist of what to look out for — a spot-check observation schedule — is often used (see the example in "Structured (Spot-Check) Observations" page 58 no 2).

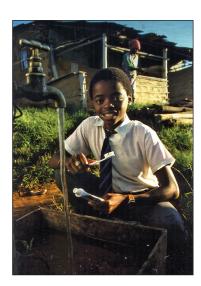
Procedure

- Conduct the healthwalk at dawn and/or dusk. Most of the relevant hygiene practices occur very early in the mornings or in the late afternoon/early evenings. It is unlikely that you will observe many of the relevant activities in the middle of the day. Conduct healthwalks at both times of day if time allows. Be careful to observe local customs and social rules, especially regarding women. Members of the study team may, in such cases, be allocated tasks that are suitable/ acceptable for their gender.
- Familiarize yourself with the tool before you set out on the healthwalk, and use it discreetly, as a reminder, if you need to refer to it during the healthwalk. Do not wave it around during the heathwalk as it might arouse suspicion among the people you meet.

- Look, listen, and learn.
- Jot down details of what you observed, and make notes of things that were said during conversations with people you met.
- Use this opportunity to meet people who may not normally go to meetings, for example, the elderly and infirm, mothers and/or caretakers of young children. Explain to them the purpose of your visit or stay in the area, and invite them to participate in your meetings (through your interpreter).
- Be careful not to make mistakes that may endanger your rapport with the study population.

Information Management and Review

At the end of this exercise, you should meet with your study team to discuss your notes and observations. You will find that the combined notes and observations make for a detailed data set on both general and specific issues. The notes will include information which may be clearly relevant or significant as well as trivial detail. Summarize your data, noting any observations that appear intriguing, revealing or relevant, to the questions you aim to address in your study. You may also want to formulate further questions for investigation. It is good practice to keep all your notes until the end of the study although you may be tempted to throw away field notes which appear to be irrelevant to your objectives. It is possible that when you get to the overall analysis stage, you will find an explanation to an intriguing finding hidden in field notes that had been put aside.



Information collected during a healthwalk can thus be used by the study team to:

- formulate or redefine questions to be addressed in the study in the light of what has been seen and heard;
- identify ways to reach different categories of study participants, such as busy mothers/caretakers of young children, community elders, and leaders, through appropriate communication channels;
- interpret findings at the end of your investigations; and
- make decisions on issues related to project design and implementation.

2 Structured (spot-check) observations

Observation is a standard anthropological method for gathering information. It is a relatively unobtrusive and highly effective method that is often combined with other methods, such as interviewing. Observations can be done in a structured way, using a set of preselected things to observe, or in an unstructured manner by noting down everything observed and then classifying the information according to relevant themes. When the study objectives are specific, clearly defined, and the time allowed for the study is limited, as is often the case in assessments of hygiene practices, structured observations are more appropriate than unstructured ones. Spot-check observations are the simplest type of structured observations that can be conducted during a healthwalk, as well as during household visits and when interviewing.

Purpose

- To see where water and sanitation-related facilities are located and to obtain first hand information on hygiene practices in and around these locations.
- To find out about hygiene-related practices in and around people's homes.

Tool

A structured (often precoded) spot-check observation schedule may be prepared, that consists of a list of relevant things to look for. This should reflect local features and may be pretested during the training period. An example which can be adapted for different settings and translated into the local languages is included. Make your own guide to suit your particular setting, and do not be confined to this example.

Procedure

- Study the structured observation schedule well before conducting the observations. Use the skills you learned during the initial training.
- Be mentally prepared concentrate.
- Try to be unobtrusive for example, do not wave your checklist around or draw unnecessary attention to what you are doing.
- Look, listen, and learn.
- Write down your observations. All additional information to what is listed on the spot-check observation schedule should be included in your written notes with as much relevant detail as possible.

Management, Review, and Use of Information

Discuss everyone's observation notes in your study team and sort them by general themes and specific clusters of hygiene practices. Prepare a summary and keep it safe for crosschecking against information obtained by other methods in the final/overall analysis and inclusion in your study report. Define questions for further investigation arising from your discussion.

3 Key-informant interviewing

Key-informant interviewing is a standard anthropological method which is widely used in health-related investigations. The term key-informant may be used for anyone who can provide you with detailed information, on the basis of their special expertise or knowledge of a particular issue. For example, a local health worker is the ideal key-informant to talk to you about infections, but not necessarily about other matters concerning water and sanitation. A village leader or village health volunteer could be helpful when discussing community participation projects.

Women may be ideal key informants to discuss children's defecation habits, and so on. Who you choose as a key-informant depends on the topic that interests you at the time. The investigator would simply raise a topic for conversation with the respondent, then let the respondent take the lead. If the respondent is highly knowledgeable on the subject raised, she or he can become a key-informant.



Strengths and limita	ations of the methods and tools o	described
Method/Tool	Strengths	Limitations
Healthwalk	+ Helps investigators to get a general feel of the study site and people (involves all their senses) in a short period of time	- May lead to wrong first impressions and important issues may be overlooked if investigators are not alert, do not have the right attitudes and/or are inadequately trained
	+ Allows investigators to conduct spot-check observations, to get known by members of the study population, to recruit participants for group discussions and to identify key-informants relatively quickly and easily	- May need to be done repeatedly to cover different times of day or different seasons, and thus require considerable time and other resources (especially if access to the study site is difficult) for the identification of relevant issues and revising choice of methods and tools. This may be overcome by extending the period of preplanning to include the conduct of healthwalks in the study site(s)
	+ Allows investigators to explore relevant issues, to identify possible leads of inquiry and/or to formulate hypotheses	
Structured (Spot-Check) Observations	+ Provides systematic information which can be quantified	- Requires skilled and disciplined "Investigators" to manage the information/field notes, to analyze and document findings
	+ Allows the collection of relatively accurate information (compared to reported information) unobtrusively and so are good for crosschecking information (triangulation)	- Does not allow feedback, or enhance active participation by members of the study population
Key-Informant Interviews	+ Allows investigators to gain in-depth knowledge of the subject under study	- May introduce bias to the study, if the number of key informants is limited and/or not representative of more than one section of the study population
	+ Provides rich sets of information (with answers to the why questions) which can be used for exploring certain issues further, crosschecking/ triangulation purposes and for the interpretation of findings	- Requires prolonged engagement with the key-informant and thus more time, unless investigators are already well known to informants
	+ Relatively easy to document findings, e.g. without investing in visual aids	- Requires time and skills to manage and review information from detailed field notes

Source: Almedom INFDC 1997

An Example of a Structured Observation Guide Used During a Healthwalk

Source: Almedom INFDC 1997

Water

- 1. What are the available water sources?
- (a) well
- (b) spring
- (c) reservoir/dam
- (d) rain water
- (e) seasonal pond
- (f) public stand post/tap/fountain
- (g) hand-dug well
- (h) other
- 2. Are the water sources protected? (indicate which ones)
- (a) yes
- (b) semi-protected
- (c) no
- 3. How far are water sources from people's homes?
- 4. What activities take place at or near the water source?
- (a) washing water containers
- (b) washing clothes
- (c) bathing/washing self
- (d) watering animals

Water source	Distance
	(a) less than 100 metres
	(b) 100-500 metres
	(c) less than 1 km
	(d) 1-2 km
	(e) 3-5 km
	(f) 6-7 km
	(g) more than 8 km

- (e) other
- 6. What utensils (and means) are used for fetching water?
- 7. How is water transported from the source to the home?
- 8. Is water treated at the source, and if so, how?
- (a) by filtering with a piece of cloth
- (b) by chlorination
- (c) by other means

- *9. How is drinking water stored in the home?
- *10. How is drinking water handled in the home?

Sanitation

- 1. Is there evidence of faecal contamination?
- (a) along the roads
- (b) along the foot-paths
- (c) near the water source
- (d) in/near the fields
- (e) outside the houses
- (f) inside the houses
- 2. What is the contamination observed?
- (a) infants/young children's faeces
- (b) adults' faeces
- (c) cow dung and/or other animal faeces
- (d) other
- 3. Did you see anyone defecating? (Which person? Where? Describe)
- 4. How many of the houses you visited have latrines?
- *5. Where is the latrine located? (indicate reasons why, if relevant)
- (a) inside the courtyard
- (b) outside the courtyard
- *6. Observe the latrine.
- (a) Does it have a sound superstructure?
- (b) Is the floor safe to stand on?
- (c) Does it have a slab?
- (d) Is the hole small enough to be safe for children?
- (e) Does the latrine provide adequate privacy?
- (f) Any other features?
- *7. Is the latrine in use?
- (a) is the path leading to it clear?
- (b) is it clean?
- (c) is it reasonably free of smell?
- (d) are there cleansing materials in the vicinity? what are they?
- (e) is there water in the vicinity?
- (f) is there ash in the vicinity?
- (g) any other evidence of use?

- *8. How close are hand-washing facilities (water and ash or soap) to the latrine?
- (a) next to the latrine
- (b) within walking distance
- (c) inside the house
- * Can also be used during household visits in conjunction with semi-structured interviews.

Key-informant interviewing at the beginning of the study may help you to gain a good overview of the relevant issues. You can then begin to develop question lines for focus group discussions, identify issues to covet in observations, and so on. The subject of an interview may be very broad, such as health, or farming, or family structures in the locality; or it may be more specific – which water sources are best for which purposes, for example. Key-informant interviewing can thus provide valuable information on both specific hygiene practices and on the context in which they are assessed.

Management, Review, and Use of Information

The management of key-informant review notes, their review/analysis, and use is the same as that described in "Semi-Structured (Informal) Interviews".

4. Semi-structured (informal) interviews

The semi-structured interviewing method is also part of the standard anthropological investigative approach.

Purpose

- To investigate general as well as specific issues by asking questions informally but systematically.
- To find out which hygiene practices are considered ideal or acceptable, and why.

Tool

A written interview schedule should be prepared for the interviewer to study beforehand. This involves specific training of the study team to enable them to learn or improve their interviewing techniques, discussions of possible lines of questioning, modifications of the question lines, page 64) translation of agreed questions into the local language(s), and back-translating from the local language into English in order to check that the intended meaning is conveyed. A semi-structured interview schedule (see the example) is often used prior to the conduct of interviews rather than during the actual interviews.

Procedure

- Study your semi-structured interview schedule well in advance to familiarize yourself with the scope of the questions and the question lines selected. You can make your own brief set of notes to remind you of the question lines developed and the topics covered. Rehearse your question lines in the presence of others in your team and ask them to give you their constructive criticism.
- If possible, have another member of your study team accompany you to the interviewees home and sit through the interview as a note-taker.
- Introduce yourself, the note-taker and any other members of the study team present (e.g. the observer); establish good rapport with the interviewee and his/her family.
- · Listen carefully and use common sense, however well you may have memorized or studied the

interview schedule beforehand. For example do not ask the respondent whether her children are old enough to use a latrine if she has already told you that she has no children.

- Avoid asking leading questions.
- Use prompts and probes sensitively.
- Draw the interview to a close by thanking your interviewee and any others who have assisted you.

Management, Review and Use of Information

At the end of each day of interviewing, try to find time to write up the interview notes as a team. The notes jotted down during the interview might be very brief, but now these need to be expanded and annotated. You can expand the notes by adding in detail what YOU did not have time to write down but now recall, and you can annotate by writing your own ideas – relevant questions, importance of findings, themes, and so on – on the notes. It can be useful to have wide margins for your notes, or to write on one side of the page only, using the opposite page for comments and additional information.

Information obtained by interviews is usually analyzed by systems of categorizing, indexing, and filing to facilitate its management and analysis. For example, a separate file or index can be kept for each cluster or sub-cluster of hygiene practices, or for each category of information about the local context. Special computer software packages are now available for use in textual data analysis, however, a simple word-processing package, if available, can also make the job of filing and indexing qualitative information easier and faster.

An Example of a Semi-Structured Interview Guide

Source: Almedom INFDC 1997

Name:

Village/Town/City/Camp/Zone/Section:

- 1. Greetings (for example, "Good morning/afternoon; How are you and how are the children? Other members of the family? etc.)
- *2. How many children do you have?
- 3. Are the children able to use the latrine on their own?
- 4. If not, where do they defecate?

Girls:		Boys:		
Name:	Age:	Name:	Age:	

- 5. How do you dispose of the faeces?
- 6. Who else uses the latrine?
- 7. Do you use the latrine?

- 8. If not, why not?
- 9. Do you think young children's faeces are harmful in any way?
- 10. Why?
- 11. Have the children had diarrhoea in the last two or three days?
- 12. What caused it?
- 13. How did you treat it?
- 14. Who else has suffered from diarrhoea in the last two or three days?
- 15. How was it treated?
- 16. Where do you get your water from?
- 17. How much? How often?
- 18. What is it used for?
- 19. Do you clean water before drinking or other use?
- (a) by filtering,
- (b) by allowing it to settle,
- (c) by pouring ash in and allowing it to settle,
- (d) by boiling and/or
- (e) by other means?
- 20. Do you pay for water? How much?
- 21. When do you wash your hands?
- 22. If not, why not?
- 23. What do you use to wash your hands with soap/ash/other local soap alternative?
- *This may be a sensitive question in many cultures although you may not find any problem posing it after the preceding question (expressing interest in the children's well-being).

 An alternative may be, "tell me about your children."

World Health Organisation, Health Impact Assessment website http://www.who.int/entity/hia/en/Many of the documents below can be downloaded from this website and are available for use without restriction for non commercial purposes.

Almedom INFDC 1997. Hygiene Evaluation Procedures: Approaches and Methods for Assessing Water and Sanitation related Hygiene Practices, Astier M. Almedom, Ursula Blumenthal, and Lenore Manderson International Nutrition Foundation for Developing Countries (INFDC) ISBN No. 0-9635522-8-7

Bentley ME, Boot MT, Gittelsohn J. Stallings R. 1994. "The use of structured observations in the study of health behaviour." IRC Occasional Paper No. 27, London School of Hygiene & Tropical Medicine and IRC, The Hague. Distributor: IRC, PO Box 93190, 2509 AD The Hague, The Netherlands. This can be obtained free of charge and if necessary photocopied as specified in its copyright statement.

Birley LSTM 1995. The Health Impact Assessment of Development Projects. MH Birley, Liverpool School of Tropical Medicine HMSO London. ISBN 0115802622

Bos et al., WHO 2003. Health Opportunities in Development: a course manual on developing intersectoral decision-making skills in support of Health Impact Assessment. Robert Bos et al ISBN 9241545631 World Health Organization 2003

Canadian handbook on Health Impact Assessment volume 1: The Basics November 2004 A Report of the Federal/Provincial/Territorial Committee on Environmental and Occupational Health Canada ISBN 0-662-36503-8. http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/handbook-guide

Cotton WHO 2000. Tools for assessing the O&M status of water supply and sanitation in developing countries. World Health Organization Geneva, Switzerland 2000 WHO/SDE/WSH/00.3

Department of Health 2000 White Paper for the Transformation of the Health System in South Africa http://www.doh.gov.za/docs/policy/white_paper/healthsys97_03.html#Chapter 11

European Policy Health Impact Assessment European Public Health Alliance (EPHA) ISBN 1 874038 75 9 MAY 2004

Guidelines for Forecasting the Vector-borne Disease Implications of Water Resources Development, PEEM Guidelines 2, Martin H. Birley WHO/CWS/91.3 World Health Organisation

Health Impact Assessment Guidelines September 2001 Commonwealth of Australia ISBN 0642503656. http://enhealth.nphp.gov.au/council/pubs/pdf/hia_guidelines.pdf

Health impact assessment (HIA) report of an inter-regional meeting on harmonization and mainstreaming of HIA in the World Health Organization, Arusha, 2000 WHO/SDE/WSH/01.07

IMPACT - International Health Impact Assessment Consortium http://www.liv.ac.uk/ihia/

Scott-Samuel, A., Birley, M., Ardern, K., (2001). The Merseyside Guidelines for Health Impact Assessment. Second Edition, May 2001. ISBN 1 874038 56 2. Published by the International Health Impact Assessment Consortium

Water Sanitation Health Electronic Library. World Health Organisation 2003 WSH 2.0 ISBN 924154771

Boot M, Cairncross S. eds. 1993. *Actions Speak. The study of hygiene behaviour in water and sanitation projects*. LSHTM and IRC, The Hague. Distributor: IRC, PO Box 93190, 2509 AD The Hague, The Netherlands. This is not free, but concessions may be agreed where applicable.

Cairncross S. Kochar V, eds. 1994. Studying Hygiene Behaviour: Methods issues and experience. Sage, New Delhi. Distributor: Sage Publications, 32 M-Block Market, Greater Kailash-I, New Delhi 110048, India/6, Bonhill Street, London EC2A, 4PU, UK/ 2455 Teller Road, Thousand Oaks, California 91320, USA.

Cairncross S. Feachem R.1993. *Environmental Health Engineering in the Tropics*. 2d ed. John Wiley & Sons, Chichester. Distributors: Macmillan and TALC (as above).

Dawson S. Manderson L, Tallo V. 1993. *The Focus Groups Manual.* INFDC, Boston. Distributors: International Nutrition Foundation for Developing Countries (INFDC), PO Box 500, Charles Street Station, Boston, MA 01224-0500, USA.

Herman E, Bentley M. 1993. *Rapid Assessment Procedures (RAP): To improve the household management of diarrhea.* Methods for Social Research in Disease, International Nutrition Foundation for Developing Countries, Boston. Distributor: INFDC (as above).

Narayan D.1993. Participatory Evaluation: Tools for managing change in water and sanitation. World Bank Technical Paper, Number 207, Washington, DC. Distributor: The World Bank. I818 H Street. NW, Washington, DC 20433, USA.

Scrimshaw NS, Gleason GR, eds. 1992. *Rapid Assessment Procedures: qualitative Methodologies for Planning and Evaluation of Health Related Programmes*. INFDC, Boston. Distributor: INFDC (as above). ISBN 0-9635522-0-1

Simpson-Herbert M. 1983. *Methods for Gathering Sociocultural Data for Water Supply and Sanitation Projects*. UNDP/World Bank, Technology Advisory Group (TAG), Washington, D.C.

WASH Project. 1993. Lessons learned in water, sanitation and health thirteen years of experience in developing countries. Water and Sanitation for Health Project, Arlington, VA.

World Health Organization. 1983. *Minimum Evaluation Procedure (MEP) for water supply and sanitation projects*. WHO, Geneva. Distributor: WHO, Rural Environmental Health, Geneva.

World Health Organization. 1993a. "Improving water and sanitation hygiene behaviours for the reduction of diarrhoeal disease." Report of an informal consultation, WHO/CWS & CDD, Geneva. Distributor: WHO, Rural Environmental Health.

Yacoob M, Braddy B. Edwards L. 1992. "Rethinking Sanitation, Adding behavioural change to the project mix." WASH Technical Report No. 72, Arlington. Distributor: Environmental Health Project. 1611 N. Kent St., Room 1001, Arlington, VA 22209-2111, USA.

The WELL website is a focal point for providing access to information about water, sanitation and environmental health and related issues in developing and transitional countries. http://www.lboro.ac.uk/well/index.htm

Abbreviations

AIDS Acquired Immune Deficiency Syndrome

EIA Environmental Impact Assessment

HIA Health Impact Assessment

HIV Human Immune Deficiency Virus

INFDC International Nutrition Foundation for Developing Countries

KAP Knowledge Attitude Beliefs and Practices

LIVERPOOL School of Tropical Medicine

OHS Occupational Health and Safety

O&M Operation and Maintenance

PHAST Public Health Action Support Team

PRA Participatory Rapid Appraisal

STD Sexually Transmitted Diseases

VLOM Village-level Operation and Maintenance

WHO World Health Organisation

WRC Water Research Commission

Appendix

Summary health	h impact assessm	ent table		
Project title				
Location				
Community group				
Health hazards	Community risk factors	Environmental risk factors	Institutional risk factors (prior to the project)	Expected change in health risks attributable to the project

Summary of recommendation	S			
Recommendations	1.	2.	3.	
Safeguard or health promotional measure				
Project stage				
Community addressed				
Technical adequacy				
Social acceptability				
Economic soundness				

An Example of a Structured Observation Guide Used D	uring a Healthwalk
Water	
1. What are the available water sources?	
(a) well	
(b) spring	
(c) reservoir/dam	
(d) rain water	
(e) seasonal pond	
(f) public stand post/tap/fountain	
(g) hand-dug well	
(h) other	
2. Are the water sources protected? (indicate which ones)	
(a) yes	
(b) semi-protected	
(c) no	
3. How far are water sources from people's homes?	
Water source	Distance
	(a) less than 100 metres
	(b) 100-500 metres
	(c) less than 1 km
	(d) 1-2 km
	(e) 3-5 km
	(f) 6-7 km
	(g) more than 8 km
4. What activities take place at or near the water source?	
(a) washing water containers	
(b) washing clothes	
(c) bathing/washing self	
(d) watering animals	
(e) other	
6. What utensils (and means) are used for fetching water?	
7. How is water transported from the source to the home?	

8. Is water treated at the source, and if so, how?
(a) by filtering with a piece of cloth
(b) by chlorination
(c) by other means
*9. How is drinking water stored in the home?
*10. How is drinking water handled in the home?
Sanitation
1. Is there evidence of faecal contamination?
(a) along the roads
(b) along the foot-paths
(c) near the water source
(d) in/near the fields
(e) outside the houses
(f) inside the houses
2. What is the contamination observed?
(a) infants/young children's faeces
(b) adults' faeces
(c) cow dung and/or other animal faeces
(d) other
3. Did you see anyone defecating?
(Which person? Where? Describe)
4. How many of the houses you visited have latrines?
*5. Where is the latrine located? (indicate reasons why, if relevant)
(a) inside the courtyard
(b) outside the courtyard
*6. Observe the latrine.
(a) Does it have a sound superstructure?
(b) Is the floor safe to stand on?
(c) Does it have a slab?
(d) Is the hole small enough to be safe for children?
(e) Does the latrine provide adequate privacy?

(f) Any other features?

- *7. Is the latrine in use?
- (a) Is the path leading to it clear?
- (b) Is it clean?
- (c) Is it reasonably free of smell?
- (d) Are there cleansing materials in the vicinity?
- (e) What are they?
- (f) Is there water in the vicinity?
- (g) Is there ash in the vicinity?
- (h) Any other evidence of use?
- *8. How close are hand-washing facilities (water and ash or soap) to the latrine?
- (a) next to the latrine
- (b) within walking distance
- (c) inside the house
- * Can also be used during household visits in conjunction with semi-structured interviews.

Key-informant interviewing at the beginning of the study may help you to gain a good overview of the relevant issues. You can then begin to develop question lines for focus group discussions, identify issues to covet in observations, and so on. The subject of an interview may be very broad, such as health, or farming, or family structures in the locality; or it may be more specific - which water sources are best for which purposes, for example. Key-informant interviewing can thus provide valuable information on both specific hygiene practices and on the context in which they are assessed.

An Example of a Semi-Structured Interview Guide Village/Town/City/Camp/Zone/Section: 1. Greetings (for example, "Good morning/afternoon; How are you and how are the children? Other members of the family? etc.) *2. How many children do you have? Girls: Boys: Name: Age: Name: Age: 3. Are the children able to use the latrine on their own? 4. If not, where do they defecate? 5. How do you dispose of the faeces? 6. Who else uses the latrine? 7. Do you use the latrine? 8. If not, why not? 9. Do you think young children's faeces are harmful in any way? 10. Why? 11. Have the children had diarrhoea in the last two or three days? 12. What caused it? 13. How did you treat it? 14. Who else has suffered from diarrhoea in the last two or three days? 15. How was it treated? 16. Where do you get your water from? 17. How much? How often? 18. What is it used for? 19. Do you clean water before drinking or other use (a) by filtering (b) by allowing it to settle (c) by pouring ash in and allowing it to settle (d) by boiling, and/or (e) by other means? 20. Do you pay for water? How much? 21. When do you wash your hands? 22. If not, why not? 23. What do you use to wash your hands with soap/ash/other local soap alternative?

*This may be a sensitive question in many cultures although you may not find any problem posing it after the preceding

question (expressing interest in the children's well-being). An alternative may be, "tell me about your children."